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Smackover Deep Pay, with Peak Ahead, Important to General Industry

By Paul Wagner
N. P. N. STAFF WRITER

EL DORADO, ARK., April 25.

SMACKOVER'S prolific deep pay, from which 81 wells are producing 229,250 barrels per day, promises to have a greater effect than is generally realized.

Many of these wells are pinched below their actual capabilities and 16 are temporarily off production until they can be cleaned out again. These, added to the number actually producing at the end of the week gave the field a total of 97 deep pay wells completed in the heavy oil district.

With 100 or more tests cemented and capable of being drilled-in within the next 15 days there would appear to be no question of this producing horizon reaching a daily average yield of 300,000 barrels.

A total of more than 475 live operations are under way in the field and the drilling up of all proved locations will eventually double the number of wells now certain to be finally finished.

The only factor to prevent the reaching of the 300,000-barrel mark for the new deep pay would be the inability to take care of such a quantity of oil; resulting in the further pinching down of some of the present wells and the retarding of production from new completions.

With the Smackover light oil district giving up roundly 31,000 barrels of crude daily and the Nacatoch heavy oil division yielding approximately 52,000 barrels daily, the general Smackover district actually was producing upwards of 312,000 barrels of crude petroleum the middle of the present week.

The fact that Smackover heavy crude has found its outlet mainly into fuel channels in the past does not relieve the possibility that the flush quantities of oil now coming above ground may find other uses that will work at least an indirect effect upon the general situation.

Cracking for Motor Fuel

Two Independent pressure still refineries in the South Arkansas district are successfully cracking this crude for motor fuel. One of these plants, which has always operated on Smackover heavy, is running roundly 7000 barrels daily and getting large motor fuel recoveries.

Major companies along the Gulf Coast of Louisiana and Texas, whose refineries are fed by the great pipe line systems of the southwest, are known to have made use of quantities of this crude for cracking but details of their several operating practices have not been made public.

It is assumed that in some cases the lighter yields have been taken off in refinery practice for the purpose of rerunning and the residue has been thus fitted for application to bunker C fuel contracts.

Smackover heavy crude will not meet Admiralty specifications as it comes from the ground. Neither will it make bunker C fuel without topping off approximately 5 per cent each of heavy naphtha and kerosene yields. After such topping, however, it does qualify for bunker C requirements.

After topping, the residuum approximates 12 to 14 Be. gravity; 200 degrees F. flash. Topping yields will pay most of the expense of crude oil transportation from the field and perhaps will show an actual profit where the light fractions are rerun in cracking stills.

Different cuts, of course, will be used in the practice of different plants utilizing this raw material. Whereas some of them will follow the aforementioned policy others might use the crude as a definite gasoline source; and accomplish this by cutting as deep a gas oil cut as possible, thereafter cracking this product in pressure stills.

Outside Conditions Govern

The extent to which this may be done probably will be governed by the quantities of lighter crude readily available to the plants and the broader conditions affecting policies to be followed by integrated companies along the Gulf Coast and the Atlantic Seaboard.

Definite measures of these factors cannot be taken at this time, because of the conflicting elements necessary to take into account and the policies to be pursued by individual managements in contrast with practices of others.

An example of the possibilities of Smackover heavy crude utilized mainly for its gasoline content in pressure still practice is the fact that it will yield upwards of 40 per cent of gas oil for rerunning after topping as deeply as possible into its light oil constituents; the gas oil to be subsequently cracked will finish about 50 per cent of motor fuel and the pressure still residue may be mixed back with the original bottoms to make a merchantable fuel. This mixing is possible even after cutting down

Bulletin

SHREVEPORT, April 27.—Smackover production today totalled 326,750 barrels, including 237,500 barrels of heavy oil from the deep sand; 56,000 barrels heavy oil from the shallower sand and 33,250 barrels of light oil from the Louann district.

as low as 15 per cent bottoms, according to one authority.

Pressure still bottoms off Smackover deep heavy crude average about 30 gravity, or roughly one degree lighter than similar bottoms from the higher Nacatoch pay.

Topping Plant Test

A topping plant test on Smackover deep crude shows an eight per cent gas oil recovery after taking five per cent each of heavy naphtha and kerosene. Allowing one per cent for loss, the remaining 81 per cent makes an ideal fuel for domestic purposes as well as bunker C uses.

The 5 per cent of heavy naphtha, testing 50.7 Be. gravity, would require proportionately large quantities of raw natural gasoline to tone it up to motor fuel specifications. The percentage quantities recovered, plus the expense involved, would virtually eliminate this practice from economic significance.

Another distillation test made on a 1000 c.c. sample at atmospheric pressure gave results as follows:

	Per cent	Grav.	Flash	Fire	Visc.	Pour	Temp.
Gasoline	..	....	....	....	.....	..	....
Kerosene	15	40.0	65	....	.....	..	478
Gas Oil	25	29.3	145	190	42/100	0	658
Residue	58	15.3	360	440	196/122	0	
Loss	2						

The gravity of the crude was 20 degrees Be; flash 150 F.; fire, 200 F.; viscosity at 100 F., 334; b.s. and w., 2/10ths of 1 per cent; pour point, zero; color, black.

Crude Stored In Pits

As hundreds of thousands of barrels of this crude must be stored in earthen pits the effect of this practice upon the material is important. It is estimated that losses on earthen storage oil will reach as high as 12 per cent, principally because of the evaporation of the lighter elements hereinbefore mentioned. This statement is made to include the losses incident to treating when necessary to so handle the material to separate the oil from the water in the pits.

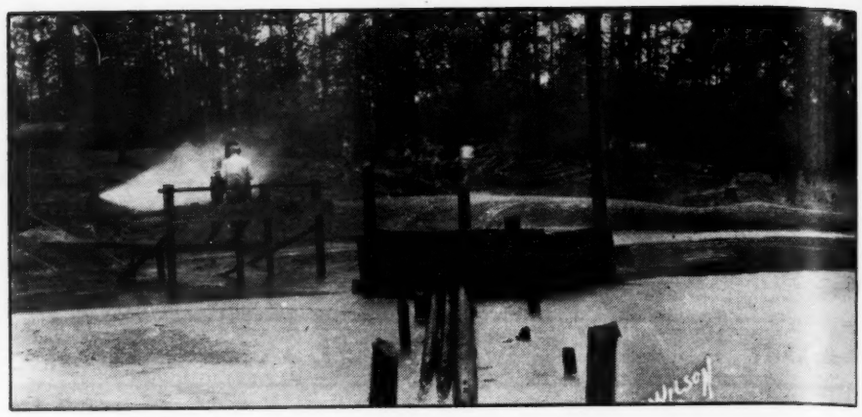
In many wells water is being produced with the oil and in some cases the percentages of brine reach as high as 45 to 80 per cent. The oil yields readily to treatment, however, and in the case of freshly produced crude it can be bled off one pit to another without the use of steam or chemicals.

A factor that will have its effect in offsetting the possibility of producers storing large quantities of this crude on their own account has to do with an estimated cost of 25 cents a barrel to hold it. This estimate includes the aforementioned losses; the cost of building storage, amounting to a minimum of 4 cents a barrel; and other minor considerations.

Seepage from the pits into the sandy surface soil are less important than would appear to be the case. After oil has seeped about six inches into the ground it has been found to form an asphaltic cement coating, after which losses are minimized.

Original open storage that had been emptied after use in the development of the 2100-foot Nacatoch horizon provided facilities for meeting the emergency brought about by the "discovery" of the deeper pay at the 2400 foot Marlbrook level. Much additional earthen storage will be required; and work on construction of these pits is going ahead with rapidity.

The fact that the shallower development had brought about the original lease investments; the construction at that time of much earthen storage, etc., minimized the total expenditures necessary when the 2400-foot sand became productive.



Roxana Petroleum Corp.'s No. 1 Murphy, northern part of 9-16-15, showing one of three flow lines. This well produced 12,000 barrels in its first six hours

Development In Good Hands

Since the stock promotion clean-up that followed the original Smackover development, the acreage is held in the hands of legitimate operators. It is true that some of the latter operate small leaseholds and are not financially well established, but in the main the present development is in good hands.

The operators at this time are not concerned with large flows from wells for purely stock sales advertising purposes. In this connection, El Dorado, as the oil headquarters of South Arkansas, does not resemble the old days of the promotion picnic; nor does Smackover resemble at this time any other district in the country that reached a similar production mark.

Although the work incident to development is being rushed, as evidenced by a total of 550 deep sand operations since the "discovery" well of this pay level, last November, the activities at least appear orderly and lacking the turmoil even of a Wortham, a Ranger, or a Mexia.

It would not be surprising if some of the operators adopt a policy of cementing casing on top of the sand in some of their wells and not drilling them in until later. One interest with 200 acres of proved ground in one of the larger leaseholds has signified its intention of not drilling on that acreage until forced to do so. Nearest locations on either side of the tract are a quarter of a mile away. Until drilling gets closer than that the owners say they will not start a single well.

These operators, who are financially stable Independents, are in position to

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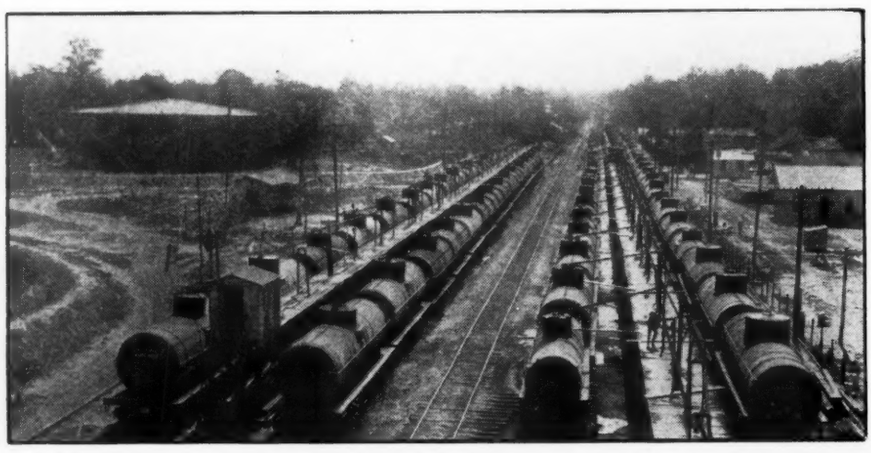

Loading racks for tank car shipments at Norphlet, Ark.—Simms Oil Co. at left, and Standard Oil Co., of Louisiana, at right

Crude Price Changes

Apirl 20.—The Texas Co. reduced Smackover below 24 gravity 20 cents to 40 cents per barrel.

April 23.—Joseph Seep Purchasing Agency reduced Corning crude 15 cents to $1.95 per barrel. Last previous reduction was on April 2.

April 23.—Standard Oil Co. of Louisiana reduced Bellevue crude 25 cents to $1.75 per barrel.

April 25.—Standard Oil Co. of Louisiana posted all Smackover crude below 24 gravity at 40 cents per barrel, it having posted 60 cents for this grade on oil accepted for shipment, and 40 cents on oil of this grade run to storage, effective April 18.

Marketing Summary

Oklahoma-Kansas—Buying of heavier gasoline slackens; spot prices weaken. Light gasolines firm. Natural gasoline strong. Kerosene unchanged. Gas oil quiet. Fuel oil weaker. Lube demand fair.

Chicago—Gasoline and kerosene steady. Gas and fuel oils weak.

Pennsylvania—Gasoline demand good; prices easier in sympathy with Mid-Continent. Neutrals improved. Light fuel oil stronger. Kerosene soft. Cylinder stocks slightly cheaper and foreign trade falls off. Wax firm.

Gulf Coastal—Trade in lubes good for season.

New York Export—Gasoline more active. Kerosene flat. Bunker, gas and lube oils weak. Waxes firmer. Petrolatum steady.

New Orleans Export—French buyers take two mixed cargoes of gasoline and kerosene. Cased gasoline dull. Kerosene quiet. Bunker and gas oil flat. Lubes softer. Waxes firmer.

Coming Meetings

Michigan Independent Oil Men's Assoc., Durant Hotel, Flint, Mich., May 7.

Kansas Oil Men's Assoc., Broadview Hotel, Wichita, Kan., May 14.

Natural Gas Assoc. and Natural Gas Supply Men, Atlantic City, N. J., May 18, 19, 20, 21.

North Carolina Gasoline and Tire Dealers, Hotel Charlotte, Charlotte, N. C., May 12, to organize state association.

Ohio Petroleum Marketers Assoc., Gibson Hotel, Cincinnati, O., May 14, 15.

National Association of Purchasing Agents, Milwaukee Auditorium, Milwaukee, Wis., May 25 to 28.

Michigan Independent Oil Men's Assoc., Edgewater Club, St. Joseph, Mich., June 25.

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store crude against the future if they find this desirable. There are others in the field in similar position but still others who are not prepared for a holding policy.

Although the statement requires amplification to keep it from sounding ridiculous in the face of the present flush outpour, it is nevertheless a fact that the present development is relatively conservative. Present wells generally average enough greater initial yields than those from the 2100-foot pay that the present development, had it been the original oil in the field, would have been so drilled that the production mark might easily have reached a half million barrels daily.

Fuel Crude Prices Firm

Fuel crude sales in f.o.b. tank car lots at loading racks were being held the middle week to an 80 cents a barrel level, in the face of the Standard's posted price for crude of 60 cents to the limits of its facilities and 40 cents for oil when run to storage. It costs about 20 cents a barrel to load crude at the racks.

The action of the Standard in wiping out its price differential April 25 was expected to result in fuel prices being lowered to about 60 cents a barrel f.o.b. tank cars as contrasted with the previously prevailing 80-cent quotation. The Standard hereafter will buy at 40 cents a barrel regardless of whether the oil is handled through its transportation facilities or run to storage.

Whatever weak interests there are in the field are without gathering line and loading rack facilities; and the stronger Independent operators are not willing to sell below the Standard's posted prices to quickly get rid of the oil.

The Standard is said to be soliciting connections at this time, not for current runs but to protect against the 100-mile, 10-inch pipe line it will build east through southern Arkansas from the Smackover field to the Mississippi river, where a terminal will be constructed at Lake Village, Chicot county.

Pipeline Construction Details

Standard's terminal, which is to be opposite Greenville, Miss., will be a point for loading barges plying between that point and Baton Rouge. The pipeline probably will require four pump stations because of the viscous nature of the crude and the size of the tube.

F. Ray McGrew, vice president and general manager of the Standard Pipeline Co., Inc., stated that every effort will be made to complete the line in 90 days.

Gulf Refining Co. of Louisiana will build about 60 miles of 6-inch and 20 miles of 8-inch pipe line loops to its existing north Louisiana-south Arkansas system to take care of El Dorado and Smackover light oil production, leaving its 8-inch line from South Arkansas free to handle 15,000 barrels daily of Smackover crude, either as heavy oil runs or mixed enough to get the aforementioned quantity through the line.

The Standard is now handling about 140 cars of Smackover daily in loading rack shipments from Norphlet and it is taking a total of approximately 56,000 barrels of currently produced oil. It was said to be the Standard's policy to about equally divide the oil handled at 60 cents and the oil run to storage at 40 cents so long as its differential was maintained. The necessity for continuing that policy no longer prevailed after the April 25 reduction to a flat price of 40 cents whether oil is run to storage or moved out of the field. The Gulf is handling about 16,000 barrels daily in tank cars, part of this applying on its railroad fuel contracts. This is in addition to its pipe line runs.

Average daily runs for the month prior to April 1, last, from the heavy oil district, not segregated as between the Nacatoch and deeper pays, were abouts as follows:

Purchasing Company	Number Wells	Barrels
American Petroleum Co., (Cullinan)	50	1,605
Gulf Refining Co. of Louisiana	271	11,625
Hughes Oil & P. L. Co.	4	70
Houston Oil Co. of Texas	32	1,200
Humble Oil & Refining Co.	32	525
Lion Oil Refining Co.	91	7,632
Roxana Petroleum Corp.	8	190
Pure Oil Co.	67	2,240
Crusader Pipeline Co.	31	1,150
Simms Oil Co.	98	5,100
Union Fuel Co.	4	65
United Central Oil Corp.	64	1,060
McMillan, Fehlman & Oliver	17	555
Texas Pipeline Co.	100	7,125
H. H. Cross Co.	42	1,215
Standard Pipeline Co., Inc.	441	24,735
Total	1352	66,092

Average daily light oil runs for March, covering 858 wells, totalled 30,925 barrels, by 12 companies.

Total steel storage stocks in the Smackover district, April 1, amounted to 3,726,425 barrels, consisting of light, heavy and mixed grades. Total quantities of pipe line oil in earthen storage amounted to 13,988,450 barrels. Oil in producers field storage totalled 499,850 barrels.

Kansas Jobbers Expect Big Attendance at Meeting

Staff Special

TULSA, April 27.—The Kansas Oil Men's Association will hold its eleventh annual meeting at the Broadview hotel at Wichita May 14, it was announced today by J. A. Motter, secretary. Jobbers decided to return to Wichita again this year in a mail vote and indications are that this meeting will have the largest attendance of any previous ones, Mr. Motter says.

Officers for the new year will be elected and the association will discuss the new tax law which is to go into effect in the state on May 1.

Among those who have been invited to address the meeting are James A. Veasey, general counsel for the Carter Oil Co., Tulsa, and Gov. Ben S. Paulen of Kansas.

Humble Buys Crude Oil in Reagan County

HOUSTON, April 27.—Confirmation has been made in Houston of two contracts whereby Humble Oil & Refining Co. buys roundly 5,500,000 barrels of crude in the Big Lake field on approximately the same basis as that paid by the Reagan County Crude Oil Purchasing Co., for its oil from the same territory. The price paid by the latter is the average of the posted price of five representative Mid-Continent purchasers. The Humble deal was with the Big Lake and Texon Companies and becomes effective May 15.

Receipts from the two selling companies will approximate 7500 barrels daily from each. Reagan County Crude Oil Purchasing Co. which re-contracted quantities of oil to the Humble will move about 10,000 barrels daily through this outlet. Excess quantities above pipe line capacity will move in tank cars to Texas City.

Sales Manager Resigns

TULSA, April 24.—Effective at once Homer J. Smith has resigned as refinery sales manager of the Waite Phillips Company, to be succeeded by L. R. Brammer, formerly holding this same position at Tulsa, but more recently district manager at Kansas City. Mr. Brammer's successor has not yet been appointed. Mr. Smith has not yet announced future plans.

Correction

It was erroneously stated in a news item appearing in the April 22 issue of National Petroleum News that F. J. Hindery was manager of the Marvel Oil & Gas Co., St. Joseph, Mo. Mr. Hindery has no connection with that company, which is owned jointly by W. H. Gronniger and Carl Hauber. Mr. Hindery is manager of the Red Star Oil Co., Inc., of St. Joseph.

RICHMOND, VA., April 27.—The Seventh Street Garage Corp., Inc., which has a storage capacity of 700 automobiles, will add 30,000 square feet of storage space to its plant. This company has built and equipped several new service stations for gasoline and oils in the past 12 months, according to J. B. Blaekbum, treasurer and general manager.

FRONT ROYAL, VA.—William J. Gochonour, Maurertown, Va., has just completed what is said to be one of the most attractive filling stations in the Shenandoah Valley, according to J. F. Forsyth, president of J. F. Forsyth & Co. of this city. The station is completely equipped and handles Texaco gasoline and motor oils exclusively.

National Petroleum News

Compilation Of Mid-Continent Refinery Operations

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Mid-Continent Refiners Reduce Runs; Draw on Gasoline Stocks

TULSA, April 28
(Fast Wire Service)

IN THE week ended April 24, total oils runs to stills by the 118 Mid-Continent refiners who report to National Petroleum News, averaged 311,550 barrels daily, a reduction of 5916 barrels from the previous week when total charges reached a record high for the year. Throughput declined in all reporting states except the Louisiana-Arkansas group, where daily charges were 44,133 barrels, compared with 42,917 barrels in the week ended April 17.

Gasoline stocks continued downward, declining 2.353,367 gallons to 79,632,303 gallons. The largest gasoline stocks at these plants this year were 8,341,598 gallons on April 3, but they have since declined to a point where they are approximately the same as on March 13.

Gasoline output was lower in all states, totaling 28,819,061 gallons, a decline of 1,678,254 gallons from the previous week. Total gasoline shipments were 31,272,428 gallons, compared with 30,700,119 gallons last week. They increased 700,968 gallons in Kansas, and 719,958 gallons in Oklahoma. Shipments from the Texas plants were 355,623 gallons below last week. North Louisiana-Arkansas shipments declined 493,994 gallons.

Kerosene production fell in all states except Kansas and in the whole area totaled 6,405,241 gallons, compared with 6,720,489 gallons in the week ended April 17. Shipments from Kansas plants were 1,932,325 gallons, a gain of almost 20 per cent. Shipments from all plants, while below those of the previous week, exceeded production, and stocks declined 151,210 gallons. Kerosene stocks have gradually declined since the week ended March 14, when they were 21,472,204 gallons.

Production of gas and fuel oil decreased 211,883 gallons. Shipments were 35,722,328 gallons against 36,951,576 gallons in the preceding week, and stocks were 126,815,541 gallons, a gain of 4,558,896 gallons, making a total increase of 7,099,427 gallons in the two weeks ended April 24. Shipments increased in all areas except north Louisiana-Arkansas. Oklahoma refiners reduced their stocks 586,000 gallons to 49,664,634 gallons. The largest gain was made at north Louisiana-Arkansas plants, where stocks increased 3,340,215 gallons.

At the rate of shipments maintained during the week stocks of gasoline at the 118 plants represented 18 days' supply; kerosene stocks 21 days' supply, and gas and fuel oil stocks 24 days' supply.

The table covering shipments and production for four weeks ended April 24, shows that during the 28 days gasoline shipments exceeded production and stocks declined 5,428,592 gallons. Kerosene shipments also exceeded production and stocks declined 444,085 gallons. Shipment of gas and fuel oil were 94.2 per cent of production and stocks increased 8,959,822 gallons.

Summary for Last Four Weeks

Production and shipments, all reporting refineries for four weeks ended April 24. Change in stocks figured from March 27.

Gasoline	**Gallons**
Production	113,841,717
Shipments	119,270,309
Net change in stocks	—5,428,592
Ratio sales to production	104.8%
Kerosene	**Gallons**
Production	25,743,547
Shipments	26,187,632
Net change in stocks	—444.085
Ratio sales to production	101.7%
Gas and Fuel Oils	**Gallons**
Production	155,552,913
Shipments	146,593,091
Net change in stocks	+8,959,822
Ratio sales to production	94.2%

Mid-Continent Refinery Operations Week Ended April 24 (*By Special Telegraph Service*)

	Kansas	%Change Previous Week	Oklahoma	%Change Previous Week	No. & Cent. Texas	%Change Previous Week	No. La.-Ark.	%Change Previous Week	Total	%Change Previous Week	Totals Week Ended Mar. 27
No. of Plants	21		45		38		14		118		118
Da.Still Cap. (bbl.)	95,700		154,400		133,300		50,900		434,300		434,300
Da.Av.Crude Run	58,674		100,685		74,229		36,697		270,285		264,357
Da.Av.Other Oils	13,751		8,420		11,658		7,436		41,265		42,679
Da. Av. Total to Stills	72,425	— 1.7	109,105	— 2.7	85,887	— 3.2	44,133	+ 2.8	311,550	—1.9	307,036
GASOLINE—Gallons											
Stocks April 17	22,301,109		39,549,146		16,111,021		4,124,394		82,085,670		83,176,252
Prod., 4-17—4-24	7,412,323	9.9	11,513,292	— 1.9	7,749,764	— 6.7	2,143,682	— 3.7	28,819,061	—5.5	28,585,463
Ship., 4-17—4-24	8,753,420	+ 8.7	12,338,584	+ 6.2	8,046,746	— 4.2	2,133,678	—18.8	31,272,428	+1.9	25,700,820
Stocks April 24	20,960,012	— 6.0	38,723,854	— 2.1	15,814,039	— 1.8	4,134,398	+ 0.2	79,632,303	—3.0	85,060,895
Ratio Sales to Prod.	118.1		107.2		103.8		99.5		108.5		89.9%
KEROSENE—Gallons											
Stocks April 17	5,137,424		9,569,072		4,859,012		622,080		20,187,588		20,904,703
Prod., 4-17—4-24	1,780,493	+ 3.4	2,324,958	— 8.4	1,971,979	— 6.1	327,811	— 9.0	6,405,241	—4.7	6,836,822
Ship. 4-17—4-24	1,932,325	+19.9	2,620,917	— 9.5	1,622,570	—15.6	380,639	+ 6.9	6,556,451	—3.4	7,261,062
Stocks April 24	4,985,592	— 3.0	9,273,113	— 3.1	5,208,421	+ 7.2	569,252	— 8.5	20,036,378	—0.7	20,480,463
Ratio Sales to Prod.	108.5		112.7		82.3		116.1		102.4		106.2%
GAS & FUEL OILS—Gallons											
Stocks April 17	13,284,100		50,250,839		46,046,265		12,675,441		122,256,645		117,908,994
Prod., 4-17—4-24	8,623,326	+14.1	11,124,851	— 6.1	11,944,164	— 2.0	8,588,883	— 3.5	40,281,224	—0.5	37,443,224
Ship. 4-17—4-24	7,791,348	+ 7.0	11,711,056	+16.4	10,971,256	+ 3.4	5,248,668	—41.7	35,722,328	—3.3	37,496,499
Stocks April 24	14,116,078	+ 6.3	49,664,634	— 1.2	47,019,173	+ 2.1	16,015,656	+26.4	126,815,541	+3.7	117,885,719
Ratio Sales to Prod.	90.4		105.3		91.9%		61.1%		88.7		100.1%

Crude Production by Districts

OKLAHOMA

	April 25	April 18
Cushing	21,900	22,000
Yale	7,150	7,300
Jennings	3,500	3,850
Garber, Billings	10,100	9,700
Tonkawa	67,450	72,250
Blackwell	5,000	4,700
North Okmulgee	15,900	15,900
Burbank, Osage county	60,000	60,300
Osage, outside Burbank	33,350	34,300
Healdton	15,400	15,600
Hewitt	16,000	15,800
Duncan	6,250	6,250
Lyons, Deaner	4,500	4,500
Bristow	34,200	30,750
Wewoka	13,850	12,100
Cromwell	41,900	43,450
Graham	10,150	9,950
Stroud	3,400	3,400
Papoose	26,200	26,850
Watchorn	7,100	8,850
Other fields	54,400	53,550
Total	457,700	463,850
Decrease		6,150

KANSAS

Eldorado, Towanda	13,600	13,250
Augusta, Fox Bush	6,000	5,700
Peabody, Elbing	5,400	5,300
Rainbow Bend	10,050	10,200
Florence, Covert	2,150	2,150
Other fields	50,600	49,000
Total	87,800	85,600
Increase		2,200

NORTH LOUISIANA

Homer	6,950	6,900
Haynesville	14,100	14,050
Caddo, light	9,000	9,650
Caddo, heavy	2,200	2,650
De Soto, Red River	4,200	4,250
Elm Grove	650	650
Bellevue	3,550	3,800
Cotton Valley	10,150	9,450
Total	50,800	51,000
Decrease		200

ARKANSAS

El Dorado	9,300	9,350
Smackover, heavy	284,850	206,550
Smackover, light	30,550	31,450
Nevada	1,600	1,550
Stephens	1,900	1,950
Total	328,150	249,850
Increase		78,300

ROCKY MOUNTAIN

Wyoming

Salt Creek	59,160	58,450
Teapot	1,775	1,865
Big Muddy	3,325	3,610
Grass Creek	4,225	4,650
Elk Basin	940	925
Greybull, etc.	130	185
Rock River	3,380	3,250
Lance Creek	1,775	600
Poison Spider	85	80
Osage	410	340
Hamilton Dome	680	600
Rex Lake	75	50
Lander	300	275
Pilot Butte	25	30
Lost Soldier	3,700	4,980
Ferris	80	50
Total Wyoming	80,140	79,940

Colorado

Craig	810	850
Fort Collins	860	1,340
Boulder	25	30
Florence	245	250
Rangely	100	100
Tow Creek	75	160
Total Colorado	2,115	2,730

Montana

Cat Creek	3,050	3,225
Kevin-Sunburst	3,225	3,010
Total Montana	6,275	6,235

New Mexico

	April 25	April 18
Artesia	1,045	1,040
Rattlesnake	290	425
Hogback	550	530
Total New Mexico	1,885	1,995

Recapitulation

Wyoming	80,140	79,940
Colorado	2,115	2,730
Montana	6,275	6,235
New Mexico	1,885	1,995
Miscellaneous	200	200
Total	90,615	91,100
Decrease		485

TEXAS and COASTAL LOUISIANA

	April 25	April 18
Mexia, Richland, Currie	28,030	29,320
Corsicana, Powell	53,200	52,800
Wortham	56,600	62,000
Wichita Falls district	84,755	76,995
Ranger, lime	27,300	26,380
Ranger, sand*	20,550	19,130
W. Texas: Mitchell, Reagan & Scurry counties	20,875	15,860
Panhandle	2,875	2,865
San Antonio, Luling and Mirando	47,570	48,620
Coastal Texas	90,605	93,705
Coastal Louisiana	7,780	7,950
Total	440,140	435,625
Increase		4,515

*Includes Young, Shackelford, Brown, Coleman, Callahan, Palo Pinto and Jack Counties.

Eastern	101,000	101,500

Crude Production Summary

Total E. of Rockies	1,556,205	1,478,525
Increase		77,680

*The crude production summary in the issue of April 22 incorrectly showed a decrease of 43,650 barrels east of the Rockies. It should have shown an increase of 66,750 barrels east of the Rockies, total production in that territory being 1,478,525 barrels. Through oversight, Eastern production figures were omitted from the April 18 total, which threw the rest of the figures off.

Total production, in the country during the week ended April 18 increased 67,750 barrels to 2,075,525 barrels daily.

TULSA.—B. R. Seemes, geologist, who recently returned to the United States from India, is now geologist for the Santa Fe Oil Co., which owns the Shiprock structure in the San Juan Basin, New Mexico. Mr. Semmes will make his headquarters at Farmington, N. M. for the next six months.

OSHKOSH, WIS.,—The Wisconsin Independent Oil Jobbers' Association will hold its next regular monthly meeting in Oshkosh, Wis, on Wednesday, May 20, according to announcement broadcasted by R. A. Overholser, secretary of the organization.

TULSA.—George S. Buchanan, formerly micro-paleontologist for the Pure Oil Co. here, is now connected with the Carter Oil Co. in a similar capacity.

AUSTIN, TEX.—E. H. Sellards, chief geologist of the Bureau of Economic Geology and Technology, has returned from a professional trip to Mexico.

N. P. A. Aiming to Get Uniform Tests

CAMBRIDGE SPRINGS, PA., April 24.—Elimination of varying types of testing instruments and the use of A. S. T. M. standards which have been officially adopted but are not used by all eastern refiners, were recommendations of the department of tests and standards of the National Petroleum Association at the meeting here April 22 and 23.

The department which is under the trusteeship of E. C. Gardner, Seneca Oil Works, Warren, Pa., also urged the starting of propaganda favoring the elimination of viscosity tests of light lubricating oils at 70° F. instead of 100° F. which is the standard. Abandonment of the total immersion thermometer in the taking of flash and fire point tests was recommended because it is not standard and tends only to confuse the cylinder stocks market.

The department in tackling the problem of uniformity of tests and testing instruments will follow the organization of the department of manufactures by having the chemists and other persons charged with the task of testing organize in regional groups with a central laboratory in each group for demonstrating testing methods and instruments.

Harry A. Logan, United Refining Co., Warren, Pa., suggested that the association select an official referee who would check tests and settle disputes. Action was deferred pending a plan which President O. P. Keeney said the department of standards and tests had under way.

* * *

L. W. Young, Jr., president of the South Penn Oil Co., Pittsburgh, was the association's honor guest. H. B. Higbee, chief chemist for the Atlantic Refining Co. at the Eclipse Works, Franklin, Pa., was another representative of companies in the old Standard Oil group to attend the meeting.

* * *

L. D. Wyant who has been chief petroleum chemits of the Bartlesville Experiment Station of the Bureau of Mines, was to have addressed the technical sessions but was unable to attend because he is engaged in preparing reports previous to his leaving government service to go to South America.

FAYETTEVILLE, N. Y.—Burnell H. Tracy, distributor of gasoline and oil here,, says that trade has started off briskly much earlier than last year. Mr. Tracy is installing additional pumps.

ARTESIA, N. M.—George I. McFarren, geologist, is now located here, representing a group of Kansas Independent operators. Edward W. Owen, geologist for the Keys Petroleum Co., of Oklahoma City, also is making his headquarters in this city.

Mid-Continent Gasoline Statistics Present Optimistic Picture

By J. C. Chatfield

N. P. N. STAFF WRITER

Staff Special

TULSA, April 27

A FEW days ago the general manager of one of the largest oil companies in the Mid-Continent field was asked for an opinion on the outlook for business during the summer of 1925. "I am conservatively optimistic," he replied promptly.

The apt phrasing of this executive may well be applied to the outlook for the Mid-Continent refiner as spring opens. A study of all available statistics dealing with the production, shipments and stocks of gasoline in this field makes it clear that the refiner is in a far better position than he was at the same time a year ago.

This better statistical position has been achieved in spite of the fact that still charges at Mid-Continent refineries have been far in excess of the record established a year ago. Heavy shipments and a smaller carry-over of gasoline stocks account for the satisfactory condition of inventories.

A number of illuminating facts may be gleaned from a study of current refinery figures gathered by National Petroleum News as compared with similar figures gathered a year ago by the Western Petroleum Refiners Association. For example, during the first four months of 1924, 138 refineries in the Mid-Continent with a still capacity of 481,850 barrels per day increased their stocks of gasoline 66.26 per cent. On Jan. 5, stocks were 88,573,970 gallons while on April 19, 1924, inventories had been increased to 147,267,869 gallons.

39% Gain In 1925

During the same period this year 118 refineries in the same area, with a still capacity of 434,300 barrels per day, have increased their stocks of gasoline but 39.11 per cent. On Jan. 2 this group of refineries showed gasoline inventories of 59,006,827 gallons and on April 17 the same plants held 82,085,670 gallons in reserve for the peak summer load.

An accompanying table shows daily average crude charged to stills each week shipments of gasoline and stocks of gasoline on hand at the close of the week at the 118 plants reporting to this publication for the first four months of this year and the same information on 138 plants which reported to the association in 1924. To make the figures as nearly comparable as possible activities of gulf coastal refiners were eliminated from the Western Petroleum Refiners Association figures on a percentage basis. The table thus shows figures for inland Mid-Continent plants only.

One reason for the extreme difference in gasoline stocks reported to this publication and in the inventories reported to the refiners association a year ago is the fact that one large plant which had extremely heavy inventories a year ago is not included among present reporting companies. That large company was known to have begun the year 1924 with around 40,000,000 gallons of gasoline in its tanks. The inventories of that company are known to have risen approximately 5,000,000 gallons more during the first four months of the year.

By deducting 45,000,000 gallons from the W. P. R. A. figures in April as shown in the table it will be seen that stocks on hand at remaining plants were still in excess of a hundred million gallons last year. Stocks reported to this publication by 118 plants on April 17, were 82,085,670 gallons or approximately 80 per cent as large as the W. P. R. A. stock report with the figures of the company mentioned deducted.

Stocks 80% of a Year Ago

Confirmation of the fact that stocks this year are only about 80 per cent of those a year ago may be found in the latest figures released by the U. S. Bureau of Mines. Total stocks at Oklahoma, Kansas and north Texas plants on Feb. 28, were 85 per cent as large as on the same date a year ago. Government figures for March and April are not available thus far, but stock figures for the area may be predicted from the current reports made to National Petroleum News with a reasonable degree of accuracy.

Refiners who were maintaining extremely large inventories last year are in most cases keeping their stocks down to a much lower level this year. The refiner mentioned above as having over 40,000,000 gallons of gasoline on hand a year ago reported to the writer recently that his stocks are now less than half that large. Another important refiner stated this week his stocks are only two thirds as large today as they were a year ago. Independents in the Mid-Continent have not sought to maintain a market by running their own production to storage this year while buying on the outside, as was done in 1924.

As mentioned above stocks have been kept low in spite of heavy crude runs. Figures of the U. S. Bureau of Mines for February show that crude runs in Oklahoma, Kansas and north Texas were 26 per cent larger than in February, 1924. The group of plants reporting to National Petroleum News maintained daily average still charges of 291,109 barrels during that month an increase of 23 per cent over the still charges of refiners reporting to the association in 1924, which averaged 236,606 barrels. This increase in still charges of over 20 per cent has been maintained throughout March and April as well.

The increase in shipments the first four months of this year is even more remarkable than the increase in still charges. During the 16 weeks beginning Jan. 5 and ending April 17, the 118 plants reporting to this publication

W. P. R. A. Reports Covering 138 Plants, 481,850 Bbls. Capacity				National Petroleum News Reports, Covering 118 Plants, 434,300 Bbls. Capacity			
1924 Week Ending	Bbls. Daily Aver. Still Charges	Gals. Gasoline Shipments	Gals. Gasoline Stocks	1925 Week Ending	Bbls. Daily Aver. Still Charges	Gals. Gasoline Shipments	Gals. Gasoline Stocks
Jan. 5	219,880	16,608,825	88,573,970	Jan. 2	252,745	21,441,347	59,006,827
Jan. 12	230,175	20,337,682	89,934,294	Jan. 9	270,313	22,725,856	61,512,144
Jan. 19	237,088	20,000,493	91,991,017	Jan. 16	279,464	23,880,954	63,954,116
Jan. 26	242,863	24,807,240	92,729,019	Jan. 23	282,442	22,118,888	66,923,057
Feb. 2	221,949	21,267,655	93,778,104	Jan. 30	291,488	26,345,878	67,068,856
Feb. 9	228,269	19,556,128	97,256,217	Feb. 6	274,417	22,601,278	71,304,135
Feb. 16	231,717	15,166,056	103,654,220	Feb. 13	299,077	31,541,330	69,978,468
Feb. 23	243,239	17,356,975	110,625,834	Feb. 20	297,509	25,232,807	72,905,332
Mar. 1	243,200	16,287,433	117,600,503	Feb. 27	293,796	28,624,175	72,301,964
Mar. 8	243,646	16,994,764	123,222,698	Mar. 6	282,029	25,608,252	72,517,369
Mar. 15	254,603	19,955,818	127,760,908	Mar. 13	298,353	21,028,278	79,282,988
Mar. 22	250,314	18,351,928	134,074,901	Mar. 20	305,754	26,157,672	82,176,252
Mar. 29	247,595	20,614,448	138,965,091	Mar. 27	307,036	25,700,820	85,060,895
April 5	228,019	27,929,001	137,293,876	April 3	285,565	28,429,054	83,341,598
April 12	243,591	18,249,700	142,552,967	April 10	290,371	28,868,708	82,288,474
April 19	249,090	21,004,398	147,267,869	April 17	317,466	30,700,119	82,085,670

shipped at total of 411,055,416 gallons of gasoline to their customers. During virtually the same period a year ago 138 refiners reported to the Western Petroleum Refiners Association that they shipped 314,488,544 gallons. Although from a somewhat smaller number of plants with a slightly smaller total capacity shipments were larger this year by 30.7 per cent.

Shipments Increase

An analysis of U. S. Bureau of Mines reports for January and February covering total refining activities in Oklahoma, Kansas, north Texas and north Louisiana and Arkansas shows shipments of gasoline to have been 356,967,627 gallons as compared with 228,861,724 gallons for the same two months in 1924. The increase over last year reaches the astonishing figure of 55.9 per cent. Comparison of National Petroleum News reports for the first four months of the year with those of the association for the same period a year ago as given above indicate an increase in gasoline shipments of 30.7 per cent. This would indicate that the next two reports of the government bureau will show a somewhat smaller percentage of increase for the Mid-Continent.

It will be remembered that January and February shipments were extremely heavy to export channels and that jobbers were buying actively for storage on a rising market. There has been little export movement in March and April and jobber buying has been on a hand to mouth basis.

Considering the comparisons made above as a whole, the Mid-Continent refiner may well congratulate himself that he has been able to keep his stocks of gasoline to 80 per cent of the total last year. He has increased his stocks only 39.11 per cent during the four slowest months of the year as compared with an increase of 66.26 per cent in the same four months a year ago. Stocks on April 17 this year represented only 19 days' supply. A year ago a similar group of refiners held enough gasoline to supply their customers 49 days at the rate of shipments then being maintained. Shipments have been 30 per cent greater than last year thus far and, while they may not maintain that rate of increase throughout the year, they appear very likely to exceed the increase of 17 per cent registered in 1924 over 1923. The increase in demand must be obtained very largely from current manufacture since stocks are not large in any sense of the word in the Mid-Continent.

Back From Australia

TULSA.—Ben C. Belt, chief geologist for the Vacuum Oil Co., has returned from Australia, where he conducted geological investigations for that company, and will be in charge of the Vacuum's leasing campaign in Texas. A. E. Fath, formerly of the U. S. Geological Survey, is now in Galicia doing geological work for the Vaccum Oil Co.

There are Scouts and Scouts but This One's Different

By A. F. Hinton
N. P. N. STAFF WRITER

TULSA, April 24

THE oil field scout leads a monotonous but hard-riding life. Often he is forced to leave the warm and well-lighted hotel lobby and drive several miles in his palatial "Rolls-Rough" before arriving at the designated boiler house, where the news of the day is digested and portioned out to those members in good standing. On these trips he finds time for introspection, thinking over his past life, and making up his mind over and over that he will seek other employment if the company doesn't buy him a new car.

However, he rarely does so, but continues his work, growing morose and taciturn as the years roll along. He refuses to become excited about anything, never will admit that a well is as large as its owners claim it to be, and is always more or less suspicious that there is something wrong with the depth given out by the operators.

In his reports to the home office, where the chief scout holds forth in all his glory, he tells his story as tersely as possible, and with as many abbreviations as he can think up—hoping against hope that the boys in the office, especially those whose duty it is to spot the scout tickets on the maps, will not be quite able to make out what he means by his cabalistic signs; he howls with ghoulish glee if the engineering department's map shows a well producing where he had tried to convey the impression that it was a dry hole.

Once in a while, though, we find a scout who has retained the enthusiasms of his younger days, who actually makes most of the wells in the territory assigned to him, and whose sense of humor has remained in place in spite of the jouncings it has received. That is the sort of scout which all this preliminary guff is intended to introduce. One such recently sent in a report on a wildcat well in his territory which shows him to be a perfect specimen of this rare type. He works for the "large company" to which the harassed oil writer so often refers when trying not to tell where he got his dope. His habitat is somewhere in the southern part of Oklahoma. Here is his letter, verbatim except for such names as it contained:

"Nestling up in the foothills of the Wichita mountains, scenery 100 per centum perfect, is a Star machine that has been laboring intermittently for probably 15 years at making holes in the Arbuckle coff—I mean lime. Its endeavors have been financed by a bunch of Nebraska farmers. When the wheat crop is good and the price right, they make a hole—provided there is not a coal famine here. If coal is scarce here, the farmers confiscate it, with the result that no hole is made regardless of the Nebraska wheat crop.

"This well had been drilling four or five years when I came here, and I am starting on my eighth year now. It has been an enthusiastic discovery for half a dozen different scouts, and a few years ago the Tulsa office of the ——— Co. got wildly excited about it, and caused the Grand Log Book of Sholom Alechem International to wear out one whoopee scaling from peak to peak in search of this well.

"Although there was a good wheat crop in Nebraska last year with the price right, and no coal famine, I failed to pick up this well. Last week, the ——— Co. scout, a comparatively new man here, went out and re-discovered it and re-reported it at the check-up, hence this comment. If geology is worth a damn, this well is in the Arbuckle lime, and literally can make hole until hell freezes over, provided they continue to raise wheat in Nebraska. I am enclosing a first report, or 'pick-up' ticket for the well. In bygone years I have carried it as the W. J. Hartley, located in the SEc NW SE of 29-5N-12W. Now this ——— Co. scout says it is the Godly well—godly, although bent for hell.

"I want your advice. Should I pick this well up and carry it as an active drilling well with prospects, or should I wait until hope of prospects has been abandoned, and then give you a new completion ticket with new total depth, and let it go at that? Also, do you think Godly is a nicer name than Hartley? I am asking because I am striving to please, but I am using so many correction tickets that it is a shame, and if I change ownership name on this well, it will call for another of those yellow tickets. The hole is now 2185 feet deep, just getting a good start, and there is no telling how deep it may be in the next 15 years."

GLOBE, ARIZ.—The National Indian Irrigation Service has been allotted the necessary funds by congress to proceed with the surveys and preliminary work on the Coolidge dam to be built near San Carlos, Ariz., and which will in time make another inland empire of the country along the Gila river as far as the Casa Grande Valley on the main line of the Southern Pacific R. R. according to C. L. Fauber, manager of the Rio Grande Oil Co. here. This dam will make a lake on the Gila and San Carlos rivers for many miles, Mr. Fauber says.

Plant Managers and Foremen Talk Problems at N. P. A. Meeting

By Roger B. Stafford
N. P. N. STAFF WRITER

CAMBRIDGE SPRINGS, PA., April 24

POOLING of knowledge concerning the most efficient ways to operate refineries, particularly those being operated on Pennsylvania crude oil, was accomplished in a probably unprecedented manner at the first day of the two-day semi-annual meeting of the National Petroleum Association here April 22 and 23.

The meeting was given over mostly to the discussion of refinery and traffic problems and among the more than 100 men present, more than half were from the operating and traffic departments of their companies.

Under the leadership of P. S. Tarbox, Independent Refining Co., Oil City, technical men, superintendents and foremen from the Pennsylvania refineries discussed still construction and operation, wax and sweat house problems, prevention of evaporation losses, recovery of uncondensed gases, and filtering.

These men were assisted by H. S. Bell, consulting petroleum engineer of New York, and D. G. Brandt, petroleum engineer, research department, Henry L. Doherty & Co., New York, who told of many of the latest practices at refineries throughout the country. Actual plant secrets were not revealed but what some refineries thought might have been their secrets, were found to be the common knowledge of others and information about numerous time, labor and operating cost saving methods was passed on to other members of the association to whom these practices were new.

How refineries may develop young technical men who can perform research work for them and thus keep the plants abreast the most approved refinery practices, was explained by Dr. H. J. Masson, professor of chemical engineering, New York university.

The discussion of still construction, operation and fractional distillation was led by W. S. Zehrung, technician for the Pennzoil Co., Oil City, and chairman of the Oil City, Titusville and Franklin group of the association's department of manufacture of which Mr. Tarbox has been trustee for the last six months.

Stills are usually set too low on the grates, Mr. Bell said. This low setting, he explained, resulted in inefficiency in that the still was cold when compared with the temperature of the flue gases. He favored setting stills 7 or 8 feet above the grates. He also said he favored the Dutch oven type of fire box because in that type the greatest amount of heat could be taken from the fuel.

Answering a suggestion from Dr. Masson that the tube type still could overcome a great amount of heat loss, Mr. Zehrung said the tube type could not be used on Pennsylvania crude which is run for lubricating bottoms.

Mr. Bell said that to get an even distribution of heat along the still bottom that a high bridge wall should be constructed at the rear of the fire pit and that the space between it and the bridge wall immediately back of the grates should be filled in and paved with fire brick. If the space were left open a lot of radiant heat would be lost, Mr. Bell said.

Discussion developed that good results had been obtained at the plant of the Independent Refining Co. by leveling off the paved part or even by sloping it slightly toward the rear instead of inclining it, as was the usual practice in this type of construction. Leaving the space unfilled the temperature of the flue gasses would rise too high, it was said.

L. D. Fulton, general superintendent of the Pennzoil refineries, said he believed stills with that space unpaved would show as much efficiency as stills with paving. Mr. Tarbox said the lowering of the paving at the Independent

On the steps at the Riverside Hotel. The six on the top step, left to right, are Dr. H. J. Masson, professor of New York University, who spoke on the future for industrial chemistry; D. G. Brandt, research engineer with Henry L. Doherty & Co., New York; James Sloane, J. B. Berry's Sons Co., Oil City; R. M. McCaslin, Fred G. Clark Co., Cleveland; K. M. Lyons, Keystone Petroleum Co., Warren; J. A. Wainwright, vice-president Fred G. Clark Co., Cleveland. The three in the lower row are L. P. Litzinger, president Butler County Oil Refining Co., Butler; Frank A. Epps, Tide Water Oil Co., New York, and A. C. Kirberger of Warren

refinery has saved 8 or 9 hours in the running of a charge of oil.

Mr. Brandt said suspended or flat arches under stills also resulted in good saving of fuel. These arches are so constructed of I-beams and iron casings to which fire tile are attached, that a draft of air may be forced through conduits formed by the I-beams. This air cools the arch and when thus preheated may be used as a draft on the fire under the stills.

Mr. Bell said there was a big field of waste heat in flue gasses which could be utilized to preheat crude, feed water or superheating steam. The gases are used for the latter purpose at the plant of the Pennzoil Co., Mr. Zehrung said, and flue gas temperature had been greatly reduced. The customary steam refining method, Mr. Bell said, was to put steam into the still without superheating which meant it had to be superheated within the still shell at a far greater expenditure for fuel than if the flue gases were used.

Mr. Brandt said he believed the increased gasoline yield obtained by using towers would pay bigger returns than could be saved in fuel by the raising or lowering of grates although the Empire Refineries, managed by the Doherty firm, had a headway of 8 or 10 feet under their stills. He said the best ideas in towers could be obtained from the coal tar and alcohol industries, especially the latter.

Mr. Brandt said it was better to treat cracked distillate and rerun it than to try to get end point gasoline from cracking stills. He said he knew of one plant where end point gasoline was cut from the cracking stills and then filtered.

L. D. Wyant, chemical engineer at the Bartlesville experiment station, Bureau of Mines, was to have told of what was being done in sweating at the government's experimental plant but because he is leaving government service soon, he was unable to attend. Mr. Fulton who visited Bartlesville last fall outlined the sweating experiments there and said operations were good for experimental purposes but he doubted their application on large scale operation.

The discussion was led by H. L. Peterson, refinery superintendent of the Seneca Oil Works, who is chairman of the Warren group of the department of manufactures.

Otto Koch, president, Kendall Refining Co., Bradford, said his company had obtained an even temperature in its sweathouse by installing air conduits from the top to the bottom and forcing the hot air from the top downward with electric fans. This installation followed experiments with ordinary desk fans suspended near the top of sweathouse so that the draft would be down. A variance of temperature of 15 to 17 degrees between the top and bottom had virtually been eliminated, he said.

Mr. Patterson said many wax house troubles were caused by what wax house men call "bum slop." This "bum slop" tends to gum the presses, he said He declared there was a tendency to use more steam in cracking the wax distillate on the contention that more neutral oils could be obtained. Some refiners are putting in more raw wax with the distillate before cracking but care should be taken, he warned followers of this practice, because addition of too much raw wax might result in gumming the presses.

President O. P. Keeney, Tide Water Oil Co., New York, "tells" H. A. Logan, United Refining Co., Warren, L. W. Young, Jr., president of the South Penn Oil Co., guest at the convention, and A. C. Kirberger, jeweler at Warren, who personally escorted the silver service given Col. U. G. Lyons, past president of the association.

The American Society for Testing Materials is working on the problem of determining the amount of wax in oil, it was announced, but at present there was no accurate method of determining this. L. A. Tarbox, research worker for the Independent Refining Co., Oil City, said there was usually 62 to 65 per cent of wax in the charge to the sweaters but that the actual yield was only about 36 per cent.

Mr. Zehrung said that in sweating he had found a cake 5 inches thick gave the greatest yield of wax, a 7-inch cake gave the most speed and a 6-inch cake was probably the most practical.

A method of cooling the wax better than pumping cold water through the coils, is sought. It was said one plant in the west circulated cooled air in the sweat house. This air is cooled by drawing it across the ammonia cooling coils on top the building housing the refrigerating plant.

J. W. Griswold, superintendent of the Crew Levick Co. plant at Warren, told of a chart he had prepared showing when it was more economical to throw away the earth than to continue its use.

David Crossett, manager of the Tiona Refining Co. plant at Clarendon, said earth was used eight times at his plant. The practice is to filter up under pressure. Oil to be filtered is fed into an overhead chamber, the flow being controlled by a float valve. The oil then flows to the bottom of the filter and then up.

There were varying opinions as to earth burning. Mr. Crossett said he at one time had been an adherent of the rotary kilns but later when he came to operate the retort type had found them more economical, being easier to install and to operate. He also said he believed there was less danger of fusing the earth. For small plants he favored the retort type.

The contact method of filtration was regarded as being too expensive until some means of recovering the earth had been found. The method also is still in the experimental stage.

* * *

P. S. Tarbox, Independent Refining Co., Oil City, who has served as chairman of the department of manufactures during the last six months and who has pushed through successfully the movement for the exchange of refinery operating information, has been appointed trustee of the department of economics, accounting and statistics.

Mr. Tarbox plans to have the refinery accountants and auditors organize into groups just as was done by the manufacturing department when he was its pilot. These men would meet with the refinery superintendents in arriving at cost accounting systems and to consider problems where the operating and account keeping branches of a refinery overlap.

The energy of Mr. Tarbox in getting the manufactures department to functioning, was praised by President Keeney. He pointed out that Mr. Tarbox had to overcome a great amount of prejudice and inertia in bringing about the exchange of information concerning many phases of refinery operation.

COLUMBIA, TENN.—Standard Oil Co. of Louisiana is opening a bulk station at Spring Hill and Lynville, Tenn.

Eastern Refiners Honor Three Veteran Leaders at Spring Meeting

By V.B. Guthrie
Managing Editor N.P.N.

CAMBRIDGE SPRINGS, April 24

THREE former executives of the National Petroleum Association were signally honored at the Fellowship Dinner at the Riverside hotel last night, held in connection with the regular semi-annual meeting of the association. Only one of the three, however, was present to accept the appreciation bestowed upon him by the association.

An elaborate silver service had been bought by the association to present to Col. U. G. Lyons, Conewango Refining Co., Warren, Pa., who retired last fall from the presidency of the association after holding that office for three years. Unfortunately Col. Lyons was detained by illness at his home. However, the silver service, which had been ordered by H. A. Logan, United Refining Co., Warren, was spread out on the head table at the dinner, and Fayette B. Dow, Washington counsel, read a letter which was to be signed by the trustees of the association and sent to Col. Lyons. Mr. Logan did not take any chances on bringing the set from Cambridge Springs to Warren himself, but had the jeweler there, A. C. Kirberger, come along to act as escort to the service.

Committee Appointed

The resolution to the effect that the association present to Col. Lyons some remembrance of his term as president was presented from the floor at the dinner by Louis Carruth, president of the Canfield Oil Co., Cleveland, himself one of the earliest of the eastern refiners and members of the association. Messrs. Logan, G. P. Brockway, Seneca Oil Works, Warren, and Herbert Eaton, Mutual Oil Works, Warren, were named as committee to take the service to Warren and present it to Col. Lyons.

Another president of the association and a charter member was honored by being made an honorary member of the National Petroleum Association. This was W. E. Wall, of the firm of Wall & Steigerwald, Cleveland. As former head of the Fred G. Clark Co., Mr. Wall was president of the Association for 10 years of its early existence.

The resolution presenting his name for honorary membership was presented by Mr. Brockway and passed by acclamation. In his response Mr. Wall spoke of some of the early members of the association whose faces are no longer to be seen at association meetings.

The third former executive of the association to be remembered was Judge C. D. Chamberlin, Cleveland, its secretary and general counsel since its organization, who has passed some of his association duties to the Washington office. Judge Chamberlin was unable through illness to attend the Cambridge Springs meeting this year. A resolution was presented at the dinner sending the best wishes of the members for his speedy recovery.

Business Cares Forgotten

The dinner was without any addresses. President Keeney beforehand told the members and guests to leave any thought of business at the door as they entered. To take the place of any such cares or worries masquerade hats were passed out and worn by everyone. Mr. Dow acted as master of ceremonies. Fred G. Clark, president of the Fred G. Clark Co., Cleveland, was in charge of the entertainment features.

He got together a quartette which led the singing. Three members of the quartette have been entertaining at association dinners for a long time, Mr. Clark; L. C. Jamieson, Viking Oil Co., Warren; and K. M. Lyons, Keystone Co., Warren. The fourth member was R. M. McCaslin, also of the Fred G. Clark Co. Their big hit was a parody on "It Ain't Goin' to Rain No More."

After the dinner josh presents were distributed by Mr. Dow and R. A. Wotowitch, Cities Service interests, New York. Such members as C. L. Suhr, head of Pennzoil Co., Oil City; P. S. Tarbox, Independent Refining Co., Oil City; Otto Koch, Kendall Refining Co., Warren; Herbert J. Eaton, Superior Oil Works, Warren; L. P. Litzinger, Butler County Oil Refining Co., Butler; E. W. Smiley, Superior Oil Works, Warren; M. M. Browne, Great Western Oil Co., Cleveland; Col. E. V. D. Selden, Crystal Oil Works, Oil City and others had to step forward to the head table and make appropriate remarks after receiving something from the five and 10-cent store.

The letter sent by the trustees to Col. Lyons accompanying the gift of the silver service was as follows:

Letter to Col. Lyons

"It has been the good fortune of the members of the National Petroleum Association to have had your most valuable services for a period of three years last past, and it is with regret to the members to learn that you were not in a position to give further service as chief executive.

"Your terms of office comprised a period of very trying times to the oil industry. Notwithstanding the adverse circumstances of trade conditions, the work of the association progressed in a most effective way during your entire administration, due to the executive genius which you happily possess. While good fellowship was maintained in the highest degree and the affairs of the industry were advanced by and during your administration; during that time our members learned more of you and your inestimable qualities than otherwise they could have learned, because it brought into expression all those latent powers which so thoroughly commend themselves in the comrade who is brought to the front as a leader. Not only do the members admire those

Silver Service presented by National Petroleum Association to Col. U. G. Lyons, Conewango Refining Co., Warren, for three years association president

qualities which found expression during your administration but they learned to love you as a comrade endowed with moral and intellectual force.

"The members had hoped to have you among them at the semi-annual meeting, so that before the assembled membership a tribute to your worth and an expression of appreciation of your merits could have been presented to you in an appropriate way. Nevertheless all the heartiness of the combined expression is attempted to be included in this brief message. This token is a brief reminder of the high estimation in which you are held by the membership of the association. It is presented not for its intrinsic value, but in a slight degree measuring the affectionate esteem and good fellowship existing and enduring between you and the givers.

"Col. Lyons, we recognize that anything, unless carefully chosen, is a feeble expression of the ideals of the soul, unless we would endeavor to express to you the warmth of friendship, the well wishes for your well being in the future, in the appreciation of invaluable service well done and the enjoyment through a long term of the pleasantest of memories of the past."

Fred Clark's Parody

"Oh! Prexy Keeney is a whiz
He gets them there on time,
And by his new economy plan
He's saving every dime.

"Oh! Fayette Dow he knows how
To keep them satisfied,
Our members all would be in jail
If he were not our guide.

"Oh! George P. Brockway so they say
Is always out of town,
But let a broker ask a price
He's there to turn them down.

"Oh! Charlie Suhr, he ain't so pure
He walked out to the spring.
He says I hear it is a cure
For almost anything.

"Oh! Harry Logan on the job
Is busy as a bee,
He only works an hour a day,
And then he's out to tea.

"Oh! Mr. Richard Wotowich
He lives upon a train,
You see him here, you see him there
Then he bobs up again.

"Oh! Otto Koch is prince of hosts
When you go to his house,
You drink the finest in the land
And then you dine on grouse.

"Oh! Mr. L. P. Litzinger,
Is a man who studied law,
When others can't get any crude
He sits and laughs, Haw! Haw!

"Oh! Herbert Eaton is a prince,
The squarest man there is,
But when he gets you on the 'phone
Your time is surely his."

A vote of thanks was given to Fayette B. Dow, Washington counsel, and Willis Crane, traffic attorney, for the manner in which they have handled the affairs of the association at Washington in the last six months.

Mr. Dow told of some of the work done for the association since the annual meeting last September and complimented President Keeney for his endeavors to increase the activities of the association.

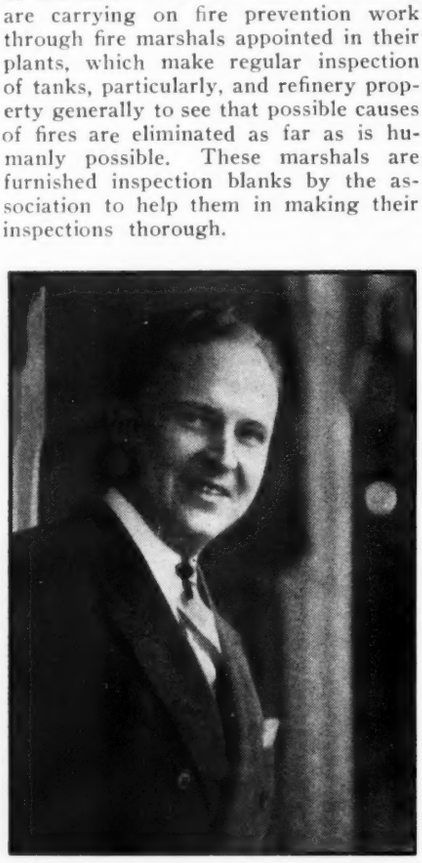
Fire Prevention Work Under Way In Eastern Refineries

By V. B. Guthrie
Managing Editor

CAMBRIDGE SPRINGS, April 23 THE development of important fire prevention work at refining plants of members through the Department of Welfare and Insurance was outlined at the session this morning of the National Petroleum Association.

The meeting was conducted by R. A. Wotowitch, Empire Refineries Inc., trustee in charge of the work of this department. Principal speaker was F. A. Epps, manager fire prevention department engineer with the Tide Water Oil Co., New York, who has made a special study of oil company fires as a member of the American Petroleum Institute committee compiling data on this subject to present to the National Fire Protection Association. In his address he also outlined the status of the discussion on proper tank spacing for safety from fires in which the fire protection association is concerned.

As a result of the work of the department of which Mr. Wotowitch is in charge it was brought out at the session today that 35 refineries, members of the National Petroleum Association, are carrying on fire prevention work through fire marshals appointed in their plants, which make regular inspection of tanks, particularly, and refinery property generally to see that possible causes of fires are eliminated as far as is humanly possible. These marshals are furnished inspection blanks by the association to help them in making their inspections thorough.



Fred G. Clark, of the Fred G. Clark Co., Cleveland, looks the gang over from the porch of the Riverside Hotel

Besides continuing this work to take in more member plants, this department plans to make this work of even greater benefit to refiners by collecting reports of fires on standard forms, which can be studied and analyzed by the men at the head of the department and helpful information passed back to the individual plants on causes of fires and methods of eliminating them.

"One of the most effective means of studying fire prevention is to study reports on small fires that are extinguished by a bucket of sand or a hand extinguisher and not considered important enough to report on even by the men at the plant to the refinery superintendent," stated Mr. Epps. "With fires of this kind accurate information can be gotten as to the cause. With big fires it is often impossible to tell with certainty how the conflagration started."

If all refining companies would start in to study these small fires and report on them to the trustees of the department, which would act as a clearing house, much valuable information could be gotten on fire prevention methods, he pointed out.

Refiners attending the session were enthusiastic over the results accomplished by the department in its campaign of fire prevention so far. Mr. Epps outlined their progress briefly, stating that in January the program was launched for improved fire prevention maintenance and against carlessness on the part of employes. Members were asked to appoint a fire marshal for each of their plants from among the employes, having in mind picking a man who would be sympathetic towards the educational work of the department.

Fire Marshals Instructed

As the fire marshals were picked they were sent a letter outlining the work they were to do and furnished blank forms to be filled out as they made their regular inspection of plant properties, the forms being drawn to call their attention to principal danger points, such as open manholes, defective vents about tanks and so on. Two general circulars have been sent these fire marshals also, one outlining precautions which should be taken to determine that tanks are absolutely gastight and maintaining them so, and one taking up the use of fire extinguishers around tanks.

The department plans to issue further circulars to the fire marshals on such subjects as static electricity, spontaneous ignition of oil tanks, fireproofing steel work around tanks, protect-

ing fire extinguishers from freezing, special fire protection around stills through steam extinguishers, fire walls, pumping out valves, and so on.

As to preventing fires arising from carelessness on the part of employes, Mr. Epps stated the department plans later to get out posters which can be displayed about plants emphasizing the principal dangers that arise through such indifference. He also said this work could be expanded to take up safety work against accidents if it proved successful in the campaign against fire hazards and if co-operation of plant executives was secured in the work.

Such members as C. L. Suhr, president of Pennzoil Co., Oil City, and G. P. Brockway, Seneca Oil Works, Warren, Pa., backed up the report of Mr. Epps, urging that the speaker be brought to their districts to speak to refinery employes generally.

Tells of Fire Data Collection

Since the subjects are closely associated Mr. Epps also went into the exhaustive report which the American Petroleum Institute committee has gathered on oil tank fires occurring the past 10 years which is now before an arbitration committee where an effort is being made to head off the National Fire Protection Association from issuing a model fire ordinance on oil tank spacing which would force the oil companies to allow unnecessarily great distances between tanks.

He brought out that the committee had discovered, through its study of actual fires, that the fire hazard is the same for all kinds of oils in gas tight tanks and that the flash point of the product was not an index as to its fire hazard. In its recommendations on tank spacing all refined products are grouped in one class, special provisions being made for crude oil in storage because of its boiling-over feature.

He stated that the committee's study had led to an estimate as to the loss by percentage of volume through fires that might be expected on crude oil and various refined products over a year. The loss on gasoline would run .026 per cent; .028 on kerosene; .045 on fuel oil of all grades and .065 on crude oil.

The committee has recommended that tanks need not be spaced farther apart than the diameter of the tank where refined oils are concerned and twice the diameter of the tank on crude oil. Where approved chemical extinguishing systems are installed this distance could be reduced by half. The necessity of fire walls for refined products was questioned, but advised for crude tanks, the fire wall to provide for a capacity equal to the tank; not to be located nearer the shell than the diameter of the tank and in no case closer than 50 feet; and to be equipped with a coping or flareback at the top of the wall to catch the boilover wave from the tank.

"The standard gastight tank is practically immune from fire when maintained in proper condition," Mr. Epp stated. "Fires in such tanks can be traced back to open manholes, defective vent screens, or some other fitting of the tank being out of order so that the tank is below normal as being gastight. Every oil company should recognize the great importance of regular periodic inspection to see that the tanks are maintained gastight."

C. L. Suhr, head of the Pennzoil Co., Oil City, and H. A. Logan, United Refining Co., Warren, find a quiet nook at the spring house to talk things over

The general subject for discussion at this session being "Preventable Waste in Oil Refineries," Mr. Epps at the suggestion of Mr. Wotowitch took up evaporation losses. His first recommendation along this line was that all tanks be made gastight, stating that 70 per cent of evaporation loss could be saved by this move. The cost to his company of providing all its tanks with this feature did not amount to more than $500 per tank, he said. The procedure was first to make a survey of the roofs of all tanks and then set out to make them gastight. He described the method that had been used where the tank tops were too light metal to permit a man standing on them. A painter's saddle was slung over the tank tops to let a man scrape the top angle joint thoroughly without getting on the roof. Then the larger openings were caulked with oakum, and white lead and whiting puttied into the space in the joint. Tanks thus fixed were standing up in good shape, he said. Tank roofs were all fitted with gastight breather valves, gauging hatches and man holes. Mr. Epps brought out the necessity of the breather valves being so located that they could be inspected conveniently.

Many California companies are installing vapor recovery systems on their tanks, the savings in oil caught from the vapors paying for the system in a reasonable time. By these systems the vapor lines from all tanks are connected to an absorption system, the vapors being pulled from the tanks by a slight vacuum.

In answer to a question Mr. Epps stated that wood roof tanks could be made gastight by equipping them with the Johns-Manville insulated roof. He told how one wood roof tank of his company was made tight by covering the roof with canvas, covering this with a regular prepared roofing and gravel, carrying the canvas down over the edge of the roof and strapping it down to the side of the tank by a cable.

Reviews Traffic Work

Preliminary to the discussion on preventable waste at refineries, Willis Crane, traffic attorney for the association, from Mr. Dow's office in Washington, went over some of the principal rate cases for members with which his office is concerned.

The Interstate Commerce Commission has refused the application of oil companies for a suspension of the effective dates of the new rates from Mid-Continent territory into Indiana, he said, and the rates are to be effective May 25. The result of these rates will be to push the point at which rates from Mid-Continent points into eastern territory take a sharp advance from the Indiana-Illinois state line to the Indiana-Ohio line. There was a possibility that this hump might later be pushed farther east, he stated, which might force the eastern refiners to ask for an adjustment in their rates to preserve the present balance.

Mr. Crane also brought up the impositions placed upon refiners by the railroads in their charges and methods of reporting car repairs. "As matters now stand the company owning the car which was repaired is not notified until 60 or 90 days after repairs have been made that such work was done," he said. "There is no reason why they cannot give prompt notice so that the company that wants to investigate the nature of the repairs may have opportunity to do so."

* * *

Richard A. Wotowitch, Empire Refineries, was appointed chairman of a committee to co-operate with the American Oil Burner Association through Col. James T. Bowles, who was appointed research director of that body early this month. It is the aim of the burner manufacturers to counteract some of the propaganda unfavorable to the burner industry, which has been published lately.

Gasoline from Still and Tank Vapors Soon Pays for Recovery Plant

By B.B. Stroud

McKean County Refining Co., Bradford, Pa.

Delivered before the National Petroleum Association, Cambridge Springs, April 22.

SEVERAL methods have been devised which reduce to a minimum the natural evaporation losses; among these may be mentioned floating decks, insulated decks, completely insulated tanks, gas tight all steel tanks with automatic pressure and vacuum relief valves and the spherical tanks which are built of comparatively light material but which will stand considerable pressure.

With the exception of the floating decks and spherical tanks, none of these does more than reduce the natural evaporation a comparatively small amount, nor do they prevent the breathing of the tank nor entrance of air upon pumping out.

System At One Plant

A number of refiners have arrangements whereby they recover a part of the gasoline from the vapors given off by the stills. The sketch illustrates the manner in which one plant in the Pennsylvanian field handles its still vapors. Tank A is located near the tail house and gases are separated from the condensate at this point. The gas is delivered to the bottom of either absorbing tank B or C and the gas bubbles up through naphtha from a perforated pipe. Any vapor escaping from either of these tanks is led up to a second tank D similarly equipped where absorption becomes complete—the unabsorbed gas is piped to the still and used as fuel.

When the naphtha in absorber B or C becomes saturated to a predetermined point, it is drawn off and the naphtha from D absorber is run into either B or C. The pressure necessary to force the gas through these absorbers is furnished by the stills and does not require in excess of 1½ pounds. The absorbing naphtha used has a 240° F. initial boiling point and 468° F. end point, and a blend is produced which has 92° F. initial boiling point and 12 per cent distillation loss.

Mixed With Straight Run

This product is not suitable for sale as a commercial gasoline but must be mixed with 70 per cent straight run in order to be utilized. The final blend is 58.7 gravity, 430° F. end point with 99 per cent recovery. The cost of this entire equipment was approximately $2500 and is large enough to take care of the still vapors from 1400 barrels of crude daily.

Another plant, No. 2, uses the same principle, but instead of a tank for separating the gas vapors, it uses a gas tight look box. The gas is delivered from the look box to the bottom of an open naphtha tank and bubbles up from the bottom of this tank through a perforated pipe. About two feet of naphtha of 56.8 gravity having an initial boiling point of 168° F. and end point of 415° F. with 98.5 per cent recovery is put into the tank at the start, and when it has reached a gravity of 58.7, it is drawn off. The gas is allowed to escape.

The characteristics of this blend are as follows: Initial boiling point 106°, end point 420°, distillation recovery 96.5 per cent. This blend is used for some special gasoline. The cost of this equipment was approximately $150.

Plant No. 3 put in a complete gas recovery plant after the refinery had been in operation some years and illustrates what can be done at any of your refineries. Its superintendent has given me the following information:

"The system consists of a small rotary exhauster, direct connected to a steam engine, with which a vacuum of 6 to 8 inches is maintained on the vacuum lines, which in turn connect with the receiving house and some 20 different tanks, the tanks themselves being protected against a pressure or the creating of too much vacuum by a combination of Oceco safety and vacuum valve set to operate at 2 inches of water.

"Very few of the tanks were gas tight steel tops. To overcome this difficulty on the wood top tanks, they were insulated against any infiltration of air or escape of gases by applying Johns-Manville insulated tops. This accomplished two purposes: it permitted maintaining a very slight vacuum on the tanks and at the same time its insulation had a tendency to cut down evaporation. Vacuum of 1 inch of water is maintained as far as possible on all tanks.

"The gas is picked up and passed through a series of coils over which cold water is flowing. Any condensation of the vapors is trapped out. The uncondensed portion of the gas is then passed into the bottom of an absorption tower 3 feet in diameter and 40 feet high. Twenty feet of this tower is packed with tile.

"The absorption fluid, which is usually a 52 gravity naphtha is pumped through a cooling coil over which cold water is passing and then into the top of the absorption tower through a spray consisting of slotted pipe, allowing the naphtha to pass down through the tile and at the same time the gases are passing up. This, of course, absorbs all but the drier portion of the gas. This gas with which there are quite considerable amounts of air mixed is then passed on to the boiler house to be burned. To avoid a backfire through this line, the gas is passed through a series of two check valves.

Simple in Operation

"In operation, this system is very simple and in any plant operating as we do, will quickly pay for itself. In any ordinary size plant, running upward of 25,000 barrels of crude per month, or even less, this system could be installed including the insulation of some 20 tanks, providing they were not too large,

E. M. Lyons, vice-president Tiona Refining Co., Clarendon, and R. J. Alexander, secretary Pennsylvania Grade Crude Association, among those at the spring house

ready to operate, at a cost of approximately $20,000. We usually reclaim 3800 to 4500 gallons of gasoline each week in addition to some 50,000 to 60,000 cubic feet of gas, which we burn under our boilers each 24 hours.

"It might be well to explain that we are operating a Sharples centrifuging plant with 60 gravity gasoline as well as purchasing some 80,000 to 100,000 gallons of casinghead and absorption gasoline each month, which necessarily gives us considerable evaporation losses to reclaim and might possibly make this equipment look a little better operating as we do than one that was not."

Plant No. 4 was designed and built with the idea of eliminating all evaporation losses and recovering as far as possible all condensable vapors.

Use Gas Tight Equipment

Specifications for all tanks called for gas tight roofs, and in order to insure this, tests were made upon completions with 4-inch water pressure, all roof and eave seams were thoroughly caulked under test. Openings for gauging thiefing and manipulation of swing lines were made gas tight but easily opened and closed to eliminate undue effort on the part of the workmen.

In deciding upon a method of recovery, the owners selected the compression system because they were able to market a very light liquified gas which could be obtained by compressing to 250 pounds. For reference purposes in describing this equipment, I will use manufacturers' names, but do not mean to recommend any particular equipment.

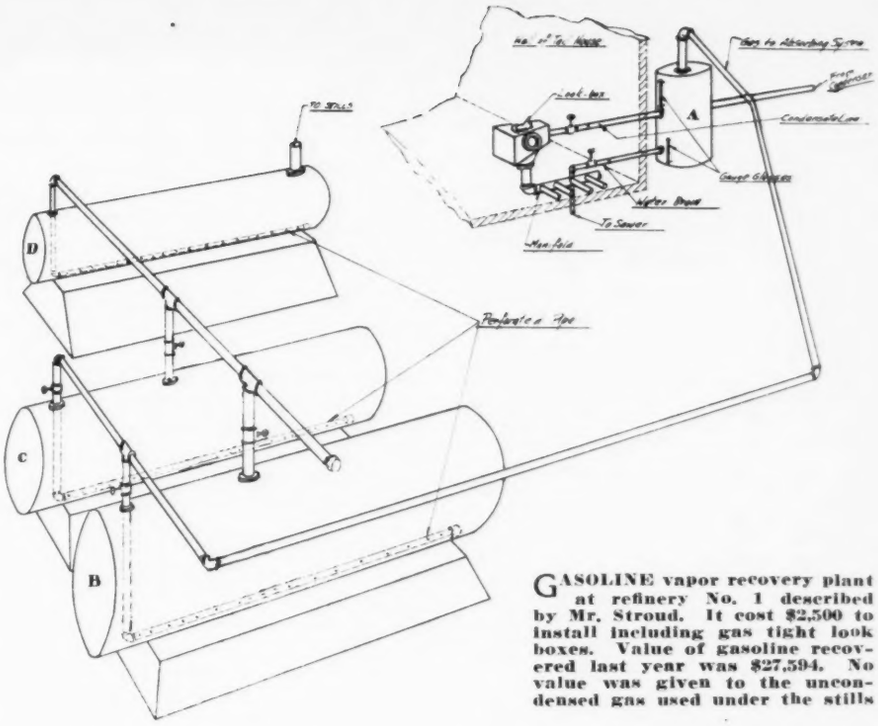
The owners selected an Ingersoll-Rand steam driven two stage compressor having an actual capacity of 127,500 cubic feet per 24 hours at 250 R.P.M. The low stage compresses the gas from atmosphere intake to 40 pounds, the high stage raises this pressure to 275 pounds. The throttle is operated by a Ruggles-Kuggleman regulator. This device regulates the speed of compressor so that a constant predetermined intake pressure is maintained; in their operation they keep about 2 inches of water vacuum at the receiving tank, this gives about ½ inch vacuum at the various tanks. This particular regulator is sensitive to a variation of ½ inch of water.

Gas from Tail House

The compressor is set as near the tail house as possible in order to eliminate the necessity of large diameter piping from tail house as the largest volume of gas is obtained from this point.

Any recovery system requires gas tight look boxes and considerable difficulty was experienced in getting a satisfactory box. They finally modified the Joseph Reid equipment and have eliminated all trouble from this source. These boxes have been in service for about six months without a single instance of cracked glasses. Pyrex glass plates, standard with the manufacturers, are used. These plates will stand 20 inches of pressure and rapid change of temperature.

All gasoline, naphtha and crude tanks are connected at the gas intake system.



GASOLINE vapor recovery plant at refinery No. 1 described by Mr. Stroud. It cost $2,500 to install including gas tight look boxes. Value of gasoline recovered last year was $27,594. No value was given to the uncondensed gas used under the stills

The lines from run down tanks are carried overhead and discharge into a receiver. This is to eliminate the possibility of liquid condensing in the gathering lines and being drawn into compressor cylinder.

Condensate Is Trapped

The gas from the low stage passes through a simple pipe coil in a water box and the condensate collected in the receiving tank the uncondensed vapors pass to high stage, the discharge from the high stage passes through similar coil and condensate collected. These tanks are six times the capacity of the first stage receiver to provide some storage capacity for both distillate and gas.

The uncondensed vapors pass through a pipe line to a Chaplin-Fulton high pressure regulator and pressure is reduced to 30 pounds. From this regulator one pipe line goes to a station central to run down tanks and another to a station central to field storage. At these stations, gas pressure is further reduced by a low pressure regulator to about 4 ounces and then goes to a duplex vacuum breaker regulator. The function of this device is to allow a slight circulation of gas through the system when the compressor is throttled to the lowest possible operating speed. It also provides against excess vacuum should the compressor regulator fail to operate.

In order to eliminate any possible injury to tanks or stills from excessive vacuum or pressure due to failure of the mechanical devices an oil seal is provided which normally does not operate but will relieve pressure or vacuum.

It is essential, of course, to eliminate every possible chance of leaks but at the very low vacuum or pressure this is not a difficult matter. In opening a tank for any purpose, care is exercised that if slight vacuum exists this can be overcome by closing a valve on the gas line to the compressor and allowing gas from return system to enter the tank. A U-tube is provided to show when tank is at atmospheric pressure.

From the receipt of the crude until finished light oils are pumped into cars, there is no contact with atmosphere. They have an arrangement so that cars can be loaded under the same conditions but have not fully perfected this.

The first stage product mixed with 200° i.b.p. 440° e.p. naphtha gives a gasoline having the following characteristics: gravity 58.4, i.b.p. 112, e.p. 438°, recovery 99 per cent, residue ½ of 1 per cent.

As they have a sale for the high stage product they do not attempt to use this as gasoline but tests show that 75 per cent of it can be used and make a gasoline superior to the average U. S. Motor gasoline on the market. The non-condensable gases average 10 cubic feet per barrel and are used for fuel. This equipment will handle vapors from 1000 barrels of fresh crude per 24 hours.

Recovery Averages

The records of Plant No. 1 show they recover 0.4 gallons of gasoline per barrel with no credit taken for gas used as fuel. Plant No. 2, shows 0.19 gallons per barrel. Plant No. 3 recovers approximately 215,000 gallons of gasoline per year and 18,250,000 cubic feet of gas suitable for fuel.

Plant No. 4 recovers 0.47 gallons of gasoline, 0.39 gallons of liquified gas or in terms of gasoline 0.755 gallons per barrel and 10 cubic feet of combustible gas.

The operation of the absorption method is practically without cost except for power expended in pumping naphtha which is negligible.

The use of rotary exhauster as in case of Plant No. 3 and the compres-

sor as used by Plant No. 4 amounts to very little as for the greater part of the time very slight displacement is necessary and as the exhaust steam is utilized the power factor is very low. For the same reason, the upkeep on this equipment is slight.

In addition to actual profit derived from saving gasoline and gas a perhaps greater profit indirectly accrues from re-reduction of fire hazard.

If the space above the oil in a tank is filled with gas vapors instead of a mixture of air and gas, there will be no explosion even in the case of a direct hit by lightning. If tanks are all steel and properly grounded, lightning has lost its terror. If tanks are gas tight but of wooden deck construction a direct hit might rupture the deck and due to the non-conductivity of wood sufficient heat generated to ignite it but the resulting fire could be easily handled as no explosion would follow.

All gas in the tail house is eliminated and this so common source of fire is removed.

Assuming the gasoline recovered is equal to the present price of Grade A absorption laid down at your siding we have the following answer to the dollar question:

Plant No. 1

Investment $2,500.
Yield from 511,000 barrels crude per year, $204,400 gallons gasoline at 13½ cents, $27,594.
No credit for gas saved.

Plant No. 2

Investment $150
Yield from 219,000 barrels crude, 41,610 gallons gasoline, $5,617.35.

Plant No. 3

Investment $20,000.
Yield 215,000 gallons gasoline....$27,950
Gas for fuel at 30 cents 5,475

Total saving $33,425

Plant No. 4

Yield from 328,5000 barrels crude
248,000 gallons gasoline $32,240.00
3,285,000 feet of gas at 30 cents 985.50

Total saving $33,225.50

Can you Pennsylvania refiners afford this waste?

Loss at Penn Refineries Averages 4.8%

CAMBRIDGE SPRINGS, Pa., April 24.—In the discussion which followed the paper of B. B. Stroud on the recovery of gasoline from still and tank vapors around refineries, a canvass of association members showed that the average refining loss at 17 complete plants was 4.8 per cent of the crude charged to stills; that the maximum loss at these 17 plants was 9.5 per cent, and the minimum 1.5 per cent. At three skimming plants the average loss was 3 per cent and ranged from 1 to 7 per cent.

Mr. Stroud said recovery of gasoline may be even greater at plants where conditions are different from those described at Plant No. 4 in his paper. At that plant well water with a temperature of 46° F. is used around the condensers. Obviously a large proportion of the stream coming over the still is condensed. Where warmer water is used around the condenser there is a larger volume of uncondensed vapors to pass through the recovery plant.

Mr. Stroud said that plant had an 85-cent insurance rate and did not have a city fire department to rely on. The rate, refiners said, was low.

H. S. Bell said he understood manufacturers of insulated roofs for tanks were not recommending such installations in cases where a vacuum was used in a tank.

* * *

James A. Fawcett, Crystal Oil Works, Oil City, is expected to reach New York May 10 on the Mauretania from Europe. He toured Mediterranean countries during the winter but reached London the day before the association convened.

Registrations at Semi-Annual Meeting National Petroleum Association

R. J. Alexander, Penn. Grade Crude Oil Ass'n, Oil City, Pa.
Fred Anderson, Crew Levick Co., Titusville, Pa.
Thomas A. Anderton, Continental Refining Co., Oil City, Pa.
A. F. Anderton, Continental Refining Co., Oil City, Pa.
R. P. Beardslee, Carson Petroleum Co., Cleveland, O.
H. S. Bell, Consulting Engineer, New York.
J. D. Berry, James B. Berry's Sons Co., Oil City, Pa.
C. D. Blair, Levi Smith Refining Co., Clarendon, Pa.
James T. Bowles, American Oil Burner Ass'n, New York.
H. E. Brandli, Cities Service Export Oil Co., New York.
D. G. Brandt, Henry L. Doherty Co., New York.
J. T. Bresnahan, Emlenton Refining Co., Emlenton, Pa.
George P. Brockway, Seneca Oil Works, Warren, Pa.
R. A. Browne, Pennzoil Co., Oil City, Pa.
S. B. Browne, Great Western Oil Co., Cleveland, O.
M. M. Browne, Great Western Oil Co., Cleveland, O.
Edward Bush, Acewood Petroleum Co., New York.
D. E. Carrier, Pennzoil Co., Oil City, Pa.
H. M. Carruth, Canfield Oil Co., Cleveland, O.
Louis Carruth, Canfield Oil Co., Cleveland, O.
John E. Cavanaugh, Pennzoil Co., Oil City, Pa.
Fred G. Clark, Fred G. Clark Co., Cleveland, O.
A. V. Clinger, Tidioute Refining Co., Tidioute, Pa.
A. L. Confer, Empire Oil Works, Oil City, Pa.
P. F. Conerty, Butler County Oil Refining Co., Butler, Pa.
Dr. P. H. Conradson, Consulting Chemist, Franklin, Pa.
C. W. Craig, Waverly Oil Works, Pittsburgh, Pa.
Willis Crane, National Petroleum Ass'n, Washington, D. C.
David W. Crossett, Tiona Refining Co., Clarendon, Pa.
David Curley, Warren Tank Car Co., Warren, Pa.
H. H. Dauler, Dauler Oil Co., Pittsburgh, Pa.
G. H. Detlor, Warren Refining Co., Warren, Pa.
H. K. Dorrance, Crew-Levick Co., Titusville, Pa.
Fayette B. Dow, National Petroleum Ass'n, Washington D. C.
W. P. Dunbar, Bell Oil & Gas Co., Pittsburgh, Pa.
Herbert G. Eaton, Superior Oil Works, Warren, Pa.
George W. Ebert, James B. Berry's Sons Co., Oil City, Pa.
Frank A. Epps, Tide Water Oil Co., New York.
M. Evans, Island Petroleum Co., Pittsburgh, Pa.
John W. Fawcett, Crystal Oil Works, Oil City, Pa.
L. D. Fulton, Pennzoil Co., Oil City, Pa.
E. C. Gardiner, Seneca Oil Works, Warren, Pa.
W. V. Geer, Crew Levick Co., Titusville, Pa.
H. L. Gibson, Carson Petroleum Co., Pittsburgh, Pa.
D. W. Grant, Franklin Creek Refining Co., Franklin, Pa.
J. W. Griswold, Crew Levick Co., Warren, Pa.
V. B. Guthrie, National Petroleum News, Cleveland, O.
E. E. Harrington, National Refining Co., Cleveland, O.
H. R. Hawkey, Tidioute Refining Co., Tidioute, Pa.
H. B. Higbee, Atlantic Refining Co., Franklin, Pa.
R. P. Howe, Crew Levick Co., Titusville, Pa.
Percy C. Hubbard, Kendall Refining Co., Bradford, Pa.
G. B. Hunter, Emlenton Refining Co., Emlenton, Pa.
Daniel C. Hughes, Conewango Refining Co., Warren, Pa.
E. M. Hyatt, Pure Oil Co., Warren, Pa.
L. C. Jamieson, Viking Oil Co., Warren, Pa.
O. P. Keeney, Tide Water Oil Co., New York.
C. R. Kerr, Sloan & Zook Co., Bradford, Pa.
W. W. Klingensmith, Transcontinental Oil Co., Pittsburgh, Pa.
Otto Koch, Kendall Refining Co., Bradford, Pa.
Harry R. Lewis, Fred G. Clark Co., Cleveland, O.
Lewis P. Litzinger, Butler County Oil Refining Co., Butler, Pa.
H. A. Logan, United Refining Co., Warren, Pa.
E. M. Lyons, Tiona Refining Co., Philadelphia.
Grant M. Lyons, Conewango Refining Co., Warren, Pa.
K. M. Lyons, Keystone Petroleum Co.. Warren, Pa.
Earle MacDonald, Warren, Pa.
Dr. H. J. Masson, New York University, New York.
B. H. Mathis, Warren Tank Car Co., Warren, Pa.
Robert M. McCaslin, Fred G. Clark Co., Cleveland, O.
Thomas E. McLaughlin, Independent Refining Co., Oil City, Pa.
S. Messer, James B. Berry's Sons Co., Oil City, Pa.
T. M. Moore, Tiona Refining Co., Clarendon, Pa.
J. T. Mullaney, Canfield Oil Co., Coraopolis, Pa.
T. M. Murphy, W. H. Daugherty & Son Refg. Co., Petrolia, Pa.
C. S. Nolf, Continental Refining Co., Oil City, Pa.
K. C. Northrop, Independent Refining Co., Oil City, Pa.
H. S. Peterson, Seneca Oil Works, Warren, Pa.
L. C. Quackenbush, Tide Water Oil Co., New York.
W. R. Reck, Bradford Oil Refining Co., Bradford, Pa.
E. W. Russ, Continental Refining Co., Oil City, Pa.
Col. E. V. D. Selden, Crystal Oil Works, Oil City, Pa.
H. E. Shoemaker, Independent Refining Co., Oil City, Pa.
William J. Sloan, Sloan & Zook Co., Bradford, Pa.
J. R. Sloane, James B. Berry's Sons Co., Oil City, Pa.
E. W. Smiley, Superior Oil Works, Warren, Pa.
W. J. Snively, Williams Sealing Corp., Decatur, Ill.
R. B. Stafford, National Petroleum News, Cleveland, O.
B. B. Stroud, McKean County Refining Co., Bradford, Pa.
C. L. Suhr, Pennzoil Co., Oil City, Pa.
L. A. Tarbox, Independent Refining Co., Oil City, Pa.
George Turnbull, Oil City Derrick, Oil City, Pa.
James A. Wainwright, Fred G. Clark Co., Cleveland, O.
T. A. Westgate, American Oil Works, Titusville, Pa.
C. O. Willson, Oil & Gas Journal, Tulsa, Okla.
Richard A. Wotowitch, Empire Refineries, Inc., New York.
L. W. Young, Jr. South Penn Oil Co., Pittsburgh, Pa.
W. S. Zehrung, Pennzoil Co., Oil City, Pa.

Board's Questionnaire Asks About Substitutes for Gasoline

By Special Correspondent

WASHINGTON, April 28

THE Federal Oil Conservation Board, after several weeks of unproductiveness this week, turned out two questionnaires. The first has to do with possible substitutes for domestic well oil and the things now derived therefrom, especially alcohol, benzol and shale oil, just as if the estimate of the early exhaustion of well oil were so nearly an established fact that those in the oil industry must have some definite views as to what is to be used as a substitute.

The second has to do with what the board calls the economics of oil utilization, based on the theory that it is incumbent on the industry, in view of the assumed near approach of the end of petroleum, to see that what it is selling is used in the way to produce the most effect, from a money point of view.

As customary, the two questionnaires were put out in form ready for publication as follows:

The Letter on Substitutes

"(1) We are now using an average of about 20 million gallons of gasoline a day. If alcohol is to supplant any appreciable portion of this amount, the problem arises of supplying the necessary vegetable matter, from waste utilization or primary growth. The waste products such as sawdust, cornstalks, straw, refuse from beet sugar refineries, are scattered in small amounts over the country, involving collection and transportation to plants in case they be manufactured into alcohol. Could the cost of assembling and treating waste products be sufficiently low to make the substitution of alcohol for gasoline attractive on a commerical basis, assuming gasoline prices stationary at present levels?

"(2) Could alcohol for motor fuel purposes profitably be made from grains grown for the purpose, in quantities sufficient to affect the demand for gasoline?

"(3) Could alcohol for motor fuel purposes profitably be made from potatoes or other vegetables cultivated for the purpose, in quantities sufficient to affect the demand for gasoline?

"(4) Would technical difficulties limit the use of alcohol or alcohol mixtures for motor fuel purposes if a continued supply of alcohol were assured on a large scale and at a competitive price?

"(5) To what extent, quantitatively, can benzol for motor fuel be produced at existing coke oven and carbonization plants.

"(6) What is possible total maximum production of benzol for motor fuel, assuming entire coke consumption of the United States thus involved?

"(7) What approximate comparative price level (wholesale) could be maintained for benzol fuel production?

"(8) What is relative efficiency in motor propulsion of gasoline and (a) alcohol, (b) benzol, (c) mixtures of gasoline and alcohol, (d) mixtures of gasoline and benzol?

"(9) What possibilities exist for increasing the efficiency of the twenty million gallons of gasoline used daily, with consequent reduction in demand, by the use of gasoline dopes?

"(10) Shales. It is claimed that crude shale oil can be produced in the United States at a price which will compete in the immediate future with ground oil. Definite commitments are known to be under consideration by responsible parties. In your opinion, (a) Is quality of shale gasoline and lubricants satisfactory, or can these be made so? State definite instances pro or con. (b) Does the assembly of an adequate mining industry for shale operations present difficulties of more than ordinary scope?

"(11) Of the several classes of processes involved in the experimental shale reduction plants in the country, which, if any, have outstanding characteristics that warrant expectation of successful competition with well oil? What are the respective advantages?

"(12) What major effects on other lines of industry, and on the raw material situation (nitrates or other raw materials, for example) of this country will be involved in the growth and expansion of the shale industry?

"(13) Is marketable recovery of by-products essential to economic development of shale operations?

"(14) Broadly speaking, does the utilization of one or more of the petroleum substitutes mentioned, or others with which you may be familiar, offer possibilities of immediate importance in relation to the conservation of petroleum?

"(15) What do you think will be the probable sequence by which these various possibilities for supplementing the domestic production of oil from wells will be realized?

"(16) What measures, if any, would you care to recommend to the end that this Nation might be prepared to utilize these or other substitutes to the best advantage?"

The board's questionnaire on economical utilization of oil products follows:

"Three uses of fuel oil and other distillates have taken on large importance and to some degree may be competitive both between themselves and with the higher products of petroleum. These three uses are for steam raising, for domestic heating, and in internal combustion engines.

"(1) First, considerating the utilization of fuel for steam making:

"(a) What is the range of gravity of oil sold for burning in steam boiler and industrial furnaces?

"(b) What part of a barrel of crude oil is sold for this purpose?

"(c) What other uses compete for this same oil?

"(d) How much of this can be converted into products that might command a higher price?

"(e) How much of the above oil is suitable for internal combustion engines, and how much might be made suitable by further processing?

"(f) At what price, as compared with coal, will oil hold its market for raising steam in (a) locomotives, (b) large steam plants, (c) general industrial furnaces?

"(2) In view of the popularity of oil for household heating purposes:

"(a) What is the range of gravity of each grade of distillate now sold for house-heating purposes?

"(b) What part of a barrel of crude oil is sold for this purpose?

"(c) What other uses compete for this same fraction?

"(d) How much of this fraction can be converted into products serving other purposes?

"(e) In general, what relation have you found between the barrels of fuel oil required in a season and the tons of coal to serve the same place?

"(3) In the light of the great promise of the internal combustion engines, using the heavier oils:

"(a) With the present development of oil and steam engines, what field seems to be open to oil engines where increased dollar efficiency can be expected?

"(b) In generating power, what overall thermal efficiencies are obtained in similar work by burning fuel oil to generate steam for use in steam engines, and by burning direct in internal combustion engines?"

Purchasing Agents Plan Service for Delegates

MILWAUKEE, April 23.—The chairman of the reception committee of the Tenth International Purchasing Agents Convention and Informashow, which is scheduled for May 25 to 28 in this city, has sent out a circular letter to all local association convention chairmen in an appeal to have each delegate forward the Milwaukee Association of Purchasing Agents his name, the hotel at which he has reservations, the time and date he expects to reach Milwaukee, whether he will arrive on the C. M. & St. P. Ry., the Northwestern or North Shore electric from Chicago, and any other information that will enable the association to make it pleasant and convenient for him.

The reception committee will meet every train from early morning until late at night the first day or up to noon the next day.

Gasoline Men Elect Officers and Plan Constructive 1925 Program

By J. C. Chatfield
N. P. N. STAFF WRITER

TULSA, April 23

E. L. PECK, manager of the Empire Gasoline Co., Bartlesville, was elected president of the Association of Natural Gasoline Manufacturers at the closing session of the fourth annual convention here today. He succeeds D. E. Buchanan, vice president of the Chestnut & Smith Corp., who has been president for two terms.

F. L. Chase, manufacturing manager of the Lone Star Gas Co., Dallas, was re-elected vice president, as was A. M. Ballard, manager of manufacturing operations of the Sun Oil Co. in Oklahoma.

By-laws of the association were amended to provide for three vice-presidents in the future and F. E. Rice, manager of the gasoline department of the Phillips Petroleum Co., Bartlesville, was elected to fill the new position. Terms of office of the treasurer O. W. Crick, Highway Oil & Refining Co., and A. V. Bourque, secretary, have not expired. These offices are filled by the executive committee.

With a registration at the convention of more than 400 the meeting was the largest of the four which the association has held. More than 200 superintendents and operators of plants were present to take part in the discussion of operating problems which formed a large part of the program.

Program for New Year

An ambitious program of activity for the association during the coming year was adopted by the convention as follows:

1. Continued study of the amount of residue gas remaining after extraction of gasoline and plant power requirements for the purpose of arriving at an average standard for use in settling contract disputes between manufacturer and producer.

2. Safety first activities, including distribution of information to members concerning the activity of other companies in that direction.

3. Continuation of the policy of holding regional meetings of the operators of plants at which manufacturing problems are discussed.

4. Continuation of the policy of educating the trade and the public on the value of natural gasoline. It was specifically recommended by the policy committee headed by R. R. Owens of the Marland Refining Co., that the association support the public relations committee of the American Petroleum Institute, that activities such as the showing of the miniature gasoline plant at the International Petroleum Exposition be continued and that officers and members embrace every opportunity to speak on natural gasoline at refiners' and jobbers' meetings or at meetings of the general public.

Co-operation of its members has been an outstanding feature of the activities of the Association of Natural Gasoline Manufacturers. Numerous meetings of the organization have been held for the purpose of standardizing manufacturing methods and the quality of the product. The association pledged itself at the meeting to continue this policy of helpful co-operation.

E. L. Peck, Manager Empire Gasoline Co. Elected president of the Association of Natural Gasoline Manufacturers

Residue Gas

The problem of residue gas occupied a prominent place on the program of the convention which closed today and is to be the subject of further study during the coming year as mentioned above. For more than a year a committee of the association headed by L. F. Bayer, vice president of the Tidal Refining Co., has been collecting data showing the amount of gas remaining after gasoline is extracted and plant requirements met. At the final session of the convention Mr. Bayer presented a paper which was accompanied by a chart showing results of this investigation. The paper and chart are reproduced in this issue of National Petroleum News.

J. H. Boyle, secretary of the Chestnut & Smith Corp., offered a resolution at the close of the presentation of the paper, directing the executive committee to investigate the findings of the committee. If they are found to be substantially correct the committee was instructed to adopt the findings for the association.

Safety Work

Following presentation of the paper on safety first by C. L. Swim of the Skelly Oil Co. at the opening session Wednesday, Vice President Chase sponsored a resolution requesting the association to gather information from members as to the type of physical examination given employees and other data. The convention voted to have Secretary Bourque collect this material and send it out to members. Mr. Swim's paper will be published in a later issue of N. P. N.

Discussion of safety problems, led by Ray E. Miller, safety engineer for the Mid-Continent Oil & Gas Association brought out a number of ideas that are being worked out now by members. One company posts a service record of each man monthly, showing how much time he lost on account of injuries. This has a tendency to keep men from losing time by making them more careful.

S. C. Carney, Roxana Petroleum Corp., suggested that in his experience there are two kinds of men who have accidents: 1, the man who is slow both mentally and physically, and 2, the man who is alert and speedy, who is overzealous to do a job quickly.

Kenyon L. Reynolds of the Pacific Gasoline Co., Los Angeles, reported that his company conducts monthly examinations of all men as to what they should do in case of accident. Men are asked the use of every valve in a plant and what to do in every possible contingency. Men who do not pass satisfactory examinations are given further training and if they still fail they are moved to other work where they cannot cause the injury or death of a fellow worker by failing to do the proper thing in an emergency.

R. R. Owens of the Marland Refining Co., told of the physical examination of prospective workers in that company and pointed out that the practice is growing among oil companies in this field.

Absorber Oil

Lively discussion followed presentation of the paper on absorption oil which was presented by A. F. Maxon of the Sun Oil Co. R. R. Dean, Waite Phillips Co., who led the discussion, advanced the opinion that operators have gotten the cart before the horse in that they have developed highly efficient absorbers and done little or nothing regarding

absorber oil. He pointed out that a plant cannot be more efficient than the absorber oil it uses. His paper will be published in the May 6 issue of N P. N.

The readiness with which an oil permits itself to be stripped of gasoline was given as one crucial test by G. G. Oberfell, Phillips Petroleum Co. He pointed out that absorber oil is like a wet rag being used in mopping up a floor. The floor cannot be gotten any drier than the rag. If the oil cannot be stripped in the still it cannot absorb gasoline from the gas below that point when next re-cycled.

Discussion brought out the fact that some companies are using naphtha as an absorbing medium and that some are using kerosene. Desirability of a short range of boiling points in the oil found no unanimous agreement among the engineers at the meeting. Some favored a long range and some a short range. H. W. Camp, general superintendent of the Empire Refineries, pointed out to the engineers that if a short range oil is demanded that the price will have to be higher since the cut out of the crude is now very narrow and would be reduced to about one half of one per cent to make the oil suggested.

Sinclair Has New Oil

H. B. Bernard, vice president of the Sinclair Oil & Gas Co., announced that Sinclair is developing a new absorber oil from cracked stock which is being used with interesting results. The oil has a 35 viscosity, an initial of 572 and an end point of 620.

Emulsification of absorber oils created considerable discussion after the matter was brought up by D. E. Buchanan, retiring president of the association. He brought out the fact that oils bought with a good emulsion test developed emulsions after being cycled through the plant a few times. F. B. Dow, petroleum engineer of the Bureau of Mines, explained that finely divided foreign substances probably cause emulsions and that these foreign substances can be picked up readily in a plant system.

E. L. Peck asserted that his company has had little emulsion trouble when operating low pressure stills at low temperatures. Mr. Dean gave an opinion that the injection of too much live steam into a still while the oil is at a low temperature is responsible for much of the emulsification of absorber oil.

M. E. Foster, assistant sales manager of the Phillips Petroleum Co., read the paper on treating by W. G. Hiatt of that company. This paper was printed in the April 22 issue of this publication. R. M. Coyle of the Chestnut & Smith Corp. led the discussion. He stated that for gasoline which must pass the doctor test only a treatment of hypochloride of lime is sufficient but that a caustic treatment must be added if the gasoline must pass the corrosion test.

Reporting his experience with lime, Mr. Coyle said that in early work the company bought some lime which was too light and fluffy so that it carried clear through the system into stock tanks. This was remedied by buying a heavier bodied lime.

R. R. Owens suggested that the mixing vat for lime be placed in the open air to avoid the possibility of fire. He referred to a fire the Marland Refining Co. had and said that now and then a little gasoline is carried back to the mixing vat with the treating agent.

Mr. Peck reported difficulty with chloride of lime because of the fact that the chlorine content of the chemical cannot be relied upon. The compound is an unstable one causing the practical 35 per cent of chlorine often to drop far below that point.

California Situation

Following the paper by Kenyon L. Reynolds on the California situation Thursday morning, Harry J. Bauer, president of the Pacific Gasoline Co., gave an extemporaneous talk in which he told of the high royalties paid for gas in California by promoters of gasoline plants operating on the public's money. He said that royalties run as high as 50 to 60 per cent making it very difficult for legitimate operators who must make a profit to get any gas at all.

At the close of the morning session a luncheon was served those attending the convention by Westcott & Greis.

At the final meeting Emby Kaye, general superintendent of the gasoline department, Skelly Oil Co., read an exhaustive paper on water supply and water treatment. The paper is published on another page in this issue. Discussion of water problems was led by S. C. Carney who told of the success his company has had in one instance with an electrical device which softened and helped remove scale from boilers.

The final paper at the convention was on lubrication presented by C. A. Fitz-Gerrell, assistant district manager of the Sun Oil Co. G. M. Davison of the Empire Gasoline Co. led the ensuing discussion.

The New Officers

Directory of the Association of Natural Gasoline Manufacturers showing newly elected officers.

President: E. L. Peck, manager Empire Gasoline Co.

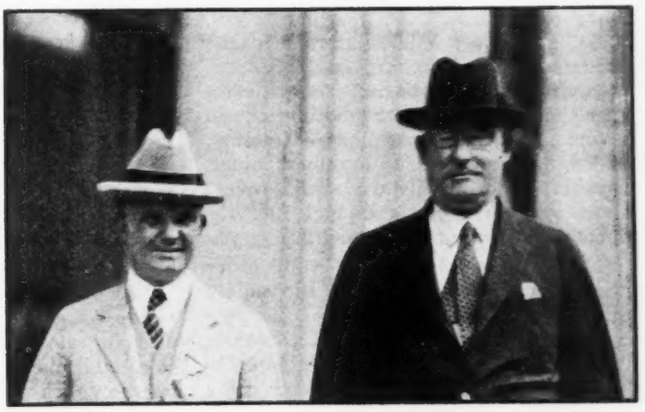
Vice Presidents: A. M. Ballard, District Manager, Twin State Oil Co; F. L. Chase, Operating Manager, Lone Star Gas Co.; F. E. Rice, General Superintendent of gasoline department, Phillips Petroleum Co.

Executive Committee elected for two years: Akin Gasoline Co., Amity Gasoline Co., Barnsdall Oil Co., Chestnut & Smith Corp., Falling Rock Cannel Coal Co., Hurley Gasoline Co., Marland Refining Co., Oil State Gasoline Co., Oklahoma Eastern Oil Co., Prairie Oil & Gas Co., Roeser & Pendleton, Inc., Transcontinental Oil Co., Wentz, Oil Corp.

Executive Committee members held over from last year: Amerada Petroleum Corp., Arkansas Fuel Oil Co., Carbide & Carbon Chemicals Corp., Pacific Gasoline Co., Phillips Petroleum Co., Skelly Oil Co., Texas Pacific Coal & Oil Co., Tidal Refining Co., Waite Phillips Co.

Note: Terms of office of Secretary A. V. Bourque and Treasurer O. W. Crick, Highway Oil & Refining Co. have not expired. These officers are elected by the executive committee.

George P. Bunn, Superintendent Phillips Petroleum Co., Bartlesville, and Tom Laney, Engineer Smith Separator Co., in a jovial mood



O. H. Shoenwald, Wentz Oil Corp., and F. L. Chase, Lone Star Gas Co., who was re-elected vice-president of the association

Tests Show How to Figure Residue Gas Percentage in Gasoline Plants

By L. F. Bayer

Vice-President and General Manager Tidal Refining Co.,Tusla.

Delivered at Convention Association of Natural Gasoline Manufacturers, Tulsa, April 22-23.

IN a number of fields in which natural gasoline plants are operating the quantity of gas remaining after gasoline extraction and plant use is insufficient to supply the operating requirements of the leases from which the gas is originally taken.

In order to keep the leases operating and to avoid the necessity of using rich gas as fuel, the deficiency may be made up by the purchase of dry gas delivered into the residue lines. Most contracts for casinghead gas, particularly those which have been executed more recently, provide for the return to the lease or leases in question, from the gas purchased, sufficient residue for operating purposes, up to but not more than the amount remaining after gasoline extraction and proportionate plant use.

Ordinarily, when natural gasoline plants are first installed, the problem of residue gas supply is not present, as there is usually an excess above the operating requirements of the leases. This excess is frequently sufficient to permit its use in further drilling operations, or, in some cases, its sale to natural gas pipe line companies. The fuel requirements of the lease are usually higher when first developed than when operations are on a settled basis, by which time gas engines have replaced steam engines at the wells or powers have been installed, making an even greater reduction in the fuel requirements. After this normal operating basis has been reached, the fuel requirements of a lease are practically constant for its profitable life.

Residue Gas Decreases

Although the lease requirements may have thus been reduced from the volumes originally required for operation, the supply of residue gas remaining from the gasoline plant has decreased in even more rapid ratio. In the first place, there is usually a large decline in the production of casinghead gas. Second, the gas usually tends to become richer, resulting in a greater diminution in volume, due to gasoline extraction. Third, as the lease becomes older, vacuum is ordinarily required, necessitating the use of additional fuel for operating vacuum equipment.

These principal reasons, with other minor causes, greatly reduce the supply of residue gas remaining after gasoline extraction and plant use. It therefore frequently happens that this volume declines to a point below that required for the regular operation of the leases from which the plant obtains its casinghead gas supply.

Practically all contracts provide that the producer may reserve his rich gas for fuel purposes for the operation of the lease, if the supply of residue gas is insufficient. If any reasonable means can be found for avoiding this condition, it is an economic waste to use

L. F. Bayer
Vice-President and General Manager
Tidal Refining Co.

the rich gas for fuel. It directly reduces the income to the producer and takes away the raw material from the natural gasoline plant.

Sometimes Buys Gas

In order to protect his supply of raw material, the gasoline plant operator has, in numerous cases, purchased dry gas to make up for this deficiency in the supply of residue gas. In the beginning, this was not such a very great burden on the gasoline producer, because the additional amount required was small at first, and the prices for gasoline in earlier years were relatively high and the prices for dry gas lower than at present.

With the ever-increasing need for larger supplies of dry gas and the higher cost of this gas, combined with low prices for his product, the natural gasoline plant operator has been facing an increasing burden.

In such cases, where the contract provisions guarantee no more than the residue gas remaining after gasoline extraction and plant use, the gasoline plant operator has very rightfully asked the producer to bear the cost of such excess gas as must be supplied to meet the producer's fuel requirements on his lease. It is apparent that the volume remaining will vary with the quality of the gas and with the particular fuel needs of the plant in question. It is therefore necessary, in order to make an equitable charge against the producer, to have sufficient data to show the percentage which will remain under different conditions. Information on this subject has been generally vague.

Residue Percentage Unexpectedly Low

An article appeared in the National Petroleum News of April 27, 1921, giving the results of tests made by one company. Several charts were shown, the final and most important one being a chart showing the percentage compared to the original volume of casinghead gas, of residue gas remaining after gasoline extraction and plant use for the various qualities of casinghead gas.

The volumes shown by these tests were generally much lower than had, in the past, been considered to apply. On account of the fact that the percentages which were commonly accepted, although not based on actual tests, were much higher, some producers objected to deductions based on the percentages indicated by these charts. Their use has been continued by some gasoline plant operators with as little opposition as could be expected from any change which tends to reduce the producer's revenue.

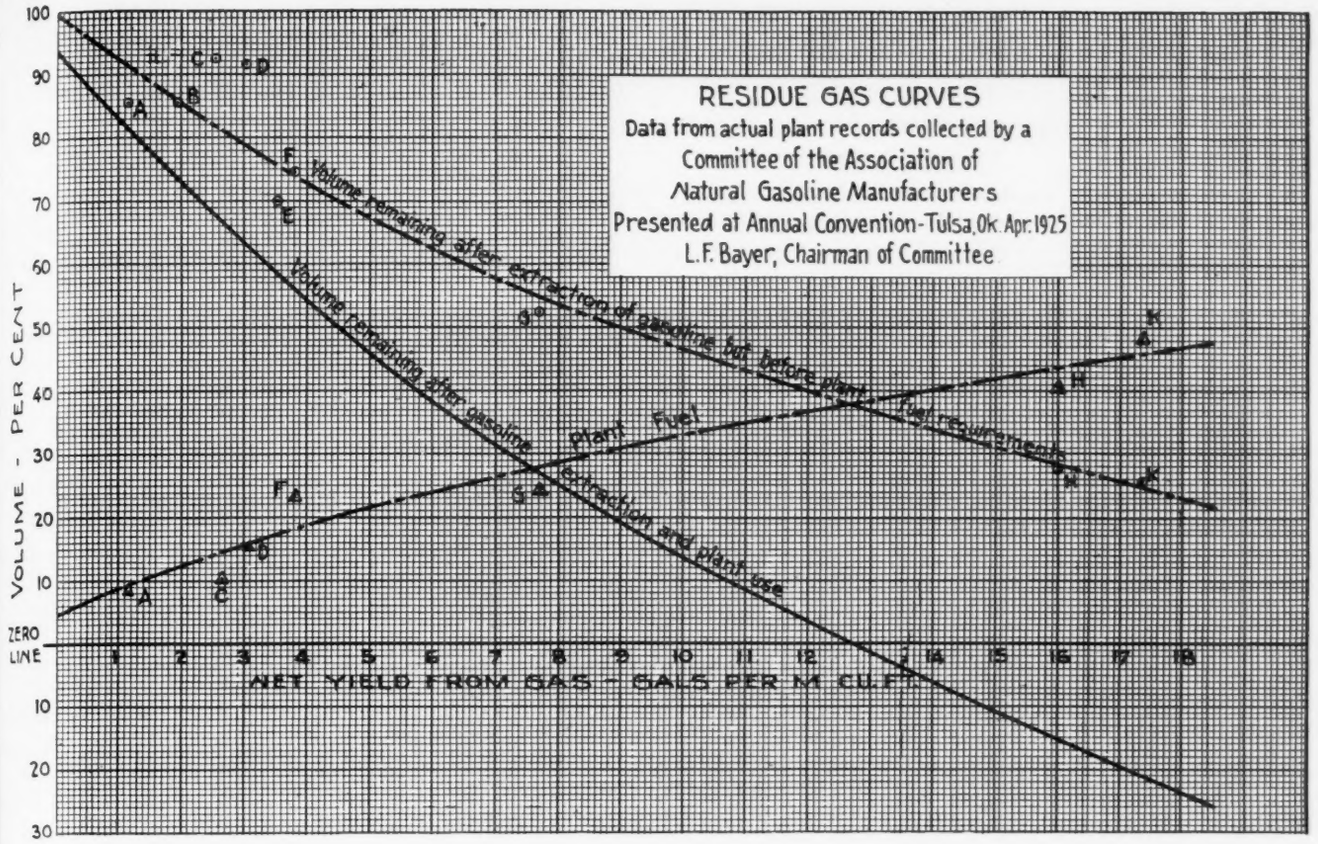
As a number of gasoline plant operators had occasion to require the data, it was felt advisable that a series of tests be undertaken under the auspices of the Association of Natural Gasoline Manufacturers by a number of different operators covering various qualities of gas, from the leanest to the richest, normally utilized in natural gasoline plants.

Test Committee Named

A committee was appointed in January, 1924, consisting of Messrs. J. H. Boyle, Emby Kaye, E. L. Peck, F. E. Rice, A. J. Schlosser and L. F. Bayer, chairman.

Plants were selected covering all qualities of gas. The type of plant, whether compression or absorption, its equipment and approximate size, were also considered, so that those finally selected covered as representative a field as possible. At some few plants originally selected, it was later found impossible to make the tests, but in spite of this, tests were completed at nine plants.

At one of the plants, the fuel volume could not be determined, and at another the conditions were not representative of usual practice and the fuel consump-


RESIDUE GAS CURVES
Data from actual plant records collected by a
Committee of the Association of
Natural Gasoline Manufacturers
Presented at Annual Convention-Tulsa, Ok. Apr. 1925
L.F. Bayer, Chairman of Committee
Volume remaining after extraction of gasoline but before plant fuel requirements
Volume remaining after gasoline extraction and plant use
Plant fuel requirements
VOLUME - PER CENT
NET YIELD FROM GAS - GALS PER M CU.FT.
ZERO LINE

tion was much higher than the usual consumption for the size of the plant and quality of gas handled. Data for fuel consumption has therefore been confined to seven plants.

The volumes reported at the plants were, in each case, measured at 60° F, and 4-oz. pressure base with the proper deductions to reduce to air-free volumes. This fact must be kept in mind in interpreting the results, as plant yields are frequently considered per 1000 cubic feet of average inlet gas, including air.

Tests On Air-Free Basis

As it was necessary to reduce all volumes to a comparative basis, it was considered best to make them on the air-free basis. On very rich gas, where the air percentage is frequently high, due to high vacuum carried on the wells, a plant yield of 12 gallons on the gross volume might, when corrected to air-free volume, be 16 or 18 gallons per 100 cubic feet.

The principal volumetric measurements recorded were the inlet gas, the stripped gas leaving the high pressure accumulators in compression plants or leaving the absorbers in absorption plants, and the stripped gas from the recompressor system, if any, where not included in the previous measurement.

The net production of natural gasoline loaded, adjusted for changes in stock, was used to determine the yield in gallons per 1000, which therefore represents the yield as finally loaded in tank cars.

The fuel requirements for operating the compressors, vacuum pumps, boilers, stills and auxiliary equipment were also recorded. In most cases the data recorded covered the plant operation for an entire month.

Testing Difficulties Met

As frequently occurs in such investigations, various delays were encountered, in most cases due to the difficulty of installing meters to determine the fuel requirements and the stripped gas from the accumulators or absorbers. In practically every plant, it was necessary to make installations for this purpose, as these volumes are not ordinarily recorded. It was not only necessary for the companies involved to spend considerable time and money to obtain the information, but in a number of cases it was found necessary to interrupt normal operation temporarily in order to make the meter installations.

The essential data obtained from these tests have been plotted as three curves which are shown on one chart, the vertical scale of this chart indicates gas volume in percentage of casinghead gas, which is the original inlet volume. The horizontal scale of the chart is marked in gallons per 1000 cubic feet and indicates the net yield of the original casinghead gas. The three curves are plotted on the same scale.

The first two curves shown by dot and dash lines are plotted from the following condensed data resulting from the tests, and the third curve is derived from them.

Plant	Net yield of casinghead gas (air free) g.p.m.	Percentage of residue after gasoline extraction but before plant use	Inlet gas Total plant fuel requirements
A	1.17	85.5%	8.2%
B	1.94	85.3%	....
C	2.66	92.7%	10.1%
D	3.06	91.8%	15.1%
E	3.57	70.0%	....
F	3.81	74.8%	23.1%
G	7.70	52.9%	24.7%
H	16.00	27.6%	40.3%
K	17.33	25.4%	48.6%

The first curve shows the volume remaining after extraction of gasoline, but before the plants' own fuel requirements are satisfied. This volume is the total volume of stripped gas leaving the accumulator tanks or absorbers, including any stripped gas from the recompressor system. At a theoretical zero yield of gasoline, the volume remaining would, of course, be 100 per cent so that this point marks the beginning of the curve which declines regularly with increasing richness of gas. The volumes remaining, as indicated by the average curve drawn through the nine points determined by these tests, gives somewhat lower results than would be obtained from a mathematical computation for the conversion of gasoline vapor to liquid. This theoretical figure will not be realized in plant practice, however, due to various gas losses which occur in all operating plants.

Of these, the principal gas losses are piston rod stuffing box leakage, compressor and tank safety valve leakage and gas loss due to blowing of oil separators. It will be noted that the points given for plants C and D are further off the curve which has been drawn as the average, than are the points for the other plants.

The reduction in gas volume indicated by the data taken at plants C and D is less than that which would be mathematically computed from the conversion of vapor to liquid. This fact has been considered in drawing the average curve, which, as noted above, must pass through the point corres-

ponding to 100 per cent volume at zero yield.

Fuel Requirement Curve

The second curve represents the average results from seven plants for their respective total fuel requirements. The percentage of fuel required for operating, based on the inlet gas, varies with the size of the plant. It is ordinarily possible to operate the larger plants more efficiently than the smaller ones, where excess capacity must be kept operating to insure continuous performance.

Lean gas is usually handled in large plants, whereas rich gas, which is ordinarily the result of marked depletion in gas volume, is usually handled in small plants. The rich gas plant uses proportionately more fuel on the average, as it ordinarily operates under a high vacuum requiring maximum vacuum horsepower. Such equipment as boilers, pumps, stills, etc., are dependent largely on the gallons of gasoline involved, and the fuel requirements for such equipment are therefore greater per 1000 cubic feet on rich gas than on lean gas. The difference in the type of engines, whether two-cycle or four-cycle, and load under which the engines operate, compared to their rated load, are also factors in the fuel requirements. In spite of these variable factors, it is noted that the points determined for the seven plants fall relatively closely along the average curve as drawn. The fuel requirements vary from a theoretical minimum of approximately 5 per cent at zero yield, to 40 per cent or more on rich gas.

By subtracting from any point on the first curve drawn, the percentage required for fuel as indicated by the plant fuel curve for the same yield in gallons per 1000, there is determined for that yield of gas the percentage remaining after gasoline extraction and plant use. By applying this principle, points in sufficient number are determined to draw the final curve which is shown on the chart as a full line indicating the volume remaining after gasoline extraction and plant use, and which is available for return to the leases.

Examples of Computation

This may be made more clear by selecting a few points and going through the process indicated. For instance, at 4.5 gallons per 1000, the volume remaining after gasoline extraction alone is found from the first curve to be 70 per cent. The fuel requirements at this yield are found from the second curve to be 20 per cent. The volume remaining after gasoline extraction and plant use is therefore 50 per cent, which will be found to correspond with the final curve. Another example might be taken at 6.5 gallons per 1000, where the volume remaining after gasoline extraction alone is found to be 60 per cent from the first curve, the fuel requirements are found to be 25 per cent from the second curve and the volume remaining after gasoline extraction and plant use is the difference, or 35 per cent, which corresponds to the full line curve.

The first and second curves which are shown dotted are included on the chart merely to indicate the method of deriving the final curve which is shown in the full line. This full line curve is intended to be used in all cases to represent the volume remaining after gasoline extraction and plant use, which volume would be available for return to the leases. It will be noted that this curve crosses the zero line at 12.7 gallons per 1000 cubic feet, indicating that, for gas richer than this, there is insufficient residue to satisfy the fuel requirements of the plant itself.

F. E. Rice, General Superintendent of the Gasoline Department of the Phillips Petroleum Co., was elected vice-president of the Association of Natural Gasoline Manufacturers

For convenience, the values from the curve are tabulated below:

Net yield of casinghead gas gals. per M cu. ft.	Volume remaining after gasoline extraction and plant use
0.5	88
1.0	83
2.0	73
3.0	63
4.0	54
5.0	46
6.0	38
7.0	31
8.0	25
9.0	19
10.0	14
11.0	9
12.0	4

The Association of Natural Gasoline Manufacturers submits this curve for the use and guidance of plant operators to determine the volume of residue gas which may be expected from any given quality of casinghead gas. The data has been taken and assembled as painstakingly as possible, and represents the average results from a number of plants.

It is natural that individual plants will vary slightly from the results of my average curve, but ordinarily the results of a single plant cannot be used to cover all of the casinghead gas being purchased by that plant.

This is due to the fact that ordinarily various qualities of gas are handled at any one plant and the data to be obtained from any one plant would merely give one point representing the average yield of the plant.

It is not equitable to pay the producer of rich gas in accordance with the ordinary scheduled method of payment and allow him residue gas at the percentage corresponding to the average yield of the plant. Such a procedure would act to penalize either the gasoline plant operator or the producer of gas leaner than the average to whom a volume greater than the average percentage is due.

It must be recognized, in order to debit the payment to gas producers with charges for excess residue consumption, that the wording of the contract must require the gasoline plant operator to deliver not more than the volume remaining after gasoline extraction and plant use.

It may be possible in some cases, where the contract does not permit of this interpretation, to have the producer enter into a supplemental agreement to permit such charges for excess residue because of the justice of the claim, or in exchange for some other consideration.

It is suggested that where a gasoline plant operator contemplates making charges for residue in excess of that required by the contract, that he advise the producer of such intention, including the price at which such excess gas will be supplied. The volume of gas used by the producer for operating his lease may, in some cases, be estimated very accurately, whereas in other cases a meter will be required for this purpose.

It has been found in practice, that the assessment of charges for excess residue has induced an economy in its use on the part of the producer, which was not previously thought possible.

It has been an incentive toward abandoning the wasteful practice of operating wells with individual gas engines, substituting instead operation by powers or rod line connections from one operating well to others. Where return gas is metered and the excess paid for, leakage from wet gasometers and similar causes is of financial interest to the producer and not merely an annoyance and expense to the plant operator.

The committee which has had this work in hand trusts that these results will be material contribution to the general knowledge of the natural gasoline industry and that it will be a means of determining equitably the respective rights of the oil producer and the natural gasoline manufacturer in the matter of residue gas.

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Sure Supply of Good Water Most Vital to Natural Gasoline Plant

By Emby Kaye

[Manager Gasoline Department, Skelly Oil Co.

Delivered before the Association of Natural Gasoline Manufacturers Convention Tulsa, April 22 and 23.

WATER to the average industrial engineer in Mid-Continent territory means trouble. Water is indispensable, as certainly as it is the greatest single source of grief and concern to the manufacturers of natural gasoline.

In the consideration of the projection of a new gasoline plant enterprise, one of the highest officials of our company never fails to ask, "Is there a water supply? Is it good?"

Right here he has hit upon the greatest enemy to the operating end of our business, directly the source of the greatest expense in the operation of our machinery. The Cost of Water and the Repairs, Wear, Treatment and Replacements Due to the Destruction Inherent in Bad Water is Actually Higher than the Cost of Lubricating Oil and Replacements Due to Normal Wear and Tear.

Most of this expense is preventable, but some of it will come despite the most conscientious efforts at upkeep.

Water for Various Uses

Water is used in gas engines as a cooling medium and to some extent in aiding lubrication by direct injection on the one hand, and combustion by humidifying the air, on the other. Translated into steam, it is one of the chief sources of power as well as an aid in the finishing of our product by the injection of live steam during distillation. Natural gasoline in its native state is a vapor, and is a fluid only when it is absorbed by other hydrocarbons or when it is subjected to low temperatures or pressures in excess of atmosphere, or both.

In the manufacture of natural gasoline, whether the absorption, compression, or charcoal-absorption method is used, water is generally the means used for effecting the condensation of the extracted, compressed, or distilled vapors.

In all the various uses to which water is put, we naturally desire a water as free as possible from solids and impurities, whether they are incrusting or non-incrusting. The best condition possible is distilled water, but inasmuch as it is not always economically expedient to provide thousands of barrels of distilled water daily, with few exceptions sources of water are sought which inherently are generally free from the corrosive or incrusting solids, or which can be at least partially neutralized by some inexpensive method of water treatment.

In the Mid-Continent, there are three chief sources of water; creeks, dams constructed for catching fair water, and water wells. The most economical supply, naturally, is the creek if it is within reasonable distance from the plant, and occasionally this water will be found satisfactory with little or no treatment. While it may be satisfactory from the standpoint of utility, it is not a reliable source of supply because of the long periods of drought.

Emby Kaye
Manager, Gasoline Department
Skelly Oil Co.

This is the rule in the territory comprising the Mid-Continent fields. Then again, it has been our experience to find a stream productive of good water only to see it adulterated by salt water and oil from producing wells in the neighborhood with the result that the supply must be watched with an eye to treatment when that becomes necessary.

In order to take advantage of the seasonal rains good results have in many instances been obtained by the construction of dams to back up the streams in order to make a reservoir, while still in other cases some producers have taken advantage of large water sheds and constructed dams to back up the water at some distance from producing fields where there would be no likelihood of pollution from any source.

In such a case the water would carry in it only those impurities gathered from the air and its contact with the solids that may be on the surface of the earth. The justification of the expense incident to the construction of the dam and acquisition of the necessary land would, of course, depend upon individual cases where the condition of the available supply and the rate of consumption would undoubtedly govern.

One recent example of the development of a water supply by this means was that of the Phillips Petroleum Co. in the Burbank field. That company operated several large water stations on Beaver Creek and on the Arkansas River for the development and the operation of their leases and the operation of their gasoline plants.

During the several years of operation with the water supply from this source, unusual trouble developed from scaling and corrosion. The operation of their gas engines was seriously hampered and the efficiency affected, although numerous water treatments were utilized apparently without satisfactory results.

Climaxing their water treatment, they acquired surface rights of a considerable territory adjacent to the field and constructed a large dam which was completed before the present wet season, and although we have had an unusually low rainfall this spring, a mammoth lake now fills the valley and stands ready to supply the needs of the ramified operations of that company with water practically as good naturally as water in the same territory, softened or treated at considerable expense.

This lake should pay annually more than the total cost of construction of the dam and pumping station, not alone in the money value of the water delivered, but in the saving of equipment and diminution of shutdowns due to cleaning and reconditioning engines and condensing units.

Drilling Water Wells

The third source, supplied from the drilling of water wells, is one entirely depending upon the structure upon which the plant is situated. In many fields water sands productive of a sufficient water supply occur, and may be utilized by wells either pumped or jetted by air or steam, a detail controlled entirely by the conditions in the particular case. In some fields, water from this source is not available, and in others what is available is of bad quality. At one of our plants a total of 11 pounds of solids were found in every 1000 gallons of water. The mineral solids include silica, iron and aluminum oxides, carbonates and chlorides of lime, carbonates of magnesia, sodium and potassium sulphates, chlorides, carbonates, and nitrates.

I believe that this is an extreme case where the saturation of minerals was very high and considerably in excess of what other leases, even in the same territory will show. The cost of treating this

water by any of the known methods would be prohibitive.

Inasmuch as this is a compression plant where water is used only in engine jackets and condensers, this represents one instance where unquestionably a closed cooling system is the most economical solution of the water problem.

Points of Attack

The easiest prey to attack in a gasoline plant are the coils and knock-out box, or dephlemator. The ends of the coils and headers are the first to become corroded. This is because they are not always wet, but rather wet and dry alternately as the wind and current blow the water as it drops after leaving the sprays. The corrosion manifests itself to a greater extent on the hot end, a fact easily explained because the heat causes this part of the coils to dry more readily.

As it dries, the iron unites with the oxygen from the air and forms rust (ferrous oxide). Where the coils are wet it is more difficult for the oxygen to reach the iron because of the ever-present film of water, and hence the rusting action (corrosion or slow combustion) is retarded.

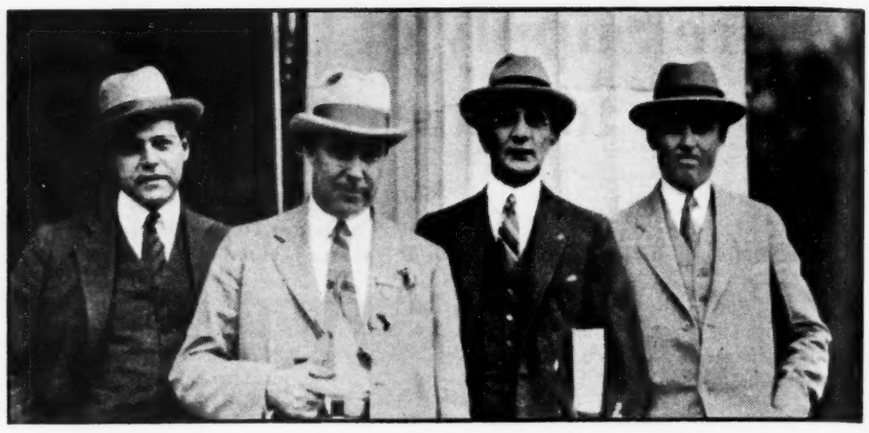
There are hundreds of different sorts of water treating compounds on the market and we have all fallen victims to several. Our general experience has been that there is no compound for rust prevention for hot coils. Rusting cannot be economically prevented on the hot surfaces without appreciably destroying the heat transfer efficiency of those coils.

A greasy film applied to shut off oxygen practically insulates the pipe and thereby brings about a condition similar to scaling. Moreover, on the very hot ends, e. g., where the vapor comes from the stills, or where the gas enters from the compressors, the unctuous paste will melt off and leave the pipe exposed. The net result is money and time lost.

Water Softener or Evaporator

The most effective methods of water treatment to retard the corrosive and prevent the scaling action of bad water, are by the employment of a water softener, or where the nature of the water permits, an evaporator. In this manner, i. e., by neutralizing the salts (in a softener) or by leaving them in the unused water, (by an evaporator) the scale nuisance can be practically eliminated. The only obstacle to these methods is the initial expense and maintenance cost of the equipment.

All industry, however, is coming more and more to realize that these major investments are justified if they can be eliminated only at a greater maintenance cost of the industrial plant. Certainly if it is cheaper to install and maintain a softener or an evaporator than it is to have to replace coils, knock-outs, cylinders, and boilers, more often an evaporator or softener should be employed. It is false economy and poor engineering to keep down the initial investment at the expense of bleeding the income over a period of years by continuous replacements.



These fellows sell the stuff. Left to right, S. E. Murphy, Empire Refineries, Inc.; A. C. Taylor, Central Texas Petroleum Co.; R. R. Rosier, Akin Gasoline Co., H. A. Trower, Phillips Petroleum Co.

The evaporator or water softener will most economically be used in connection with the closed cooling system both for engine jacket cooling and condensers and gas coolers.

The make-up water per engine unit is negligible as it is the make-up water for the gas coolers and condensers, and as the system is filled with distilled or neutralized water, the work of the evaporators would be confined to make-up water for the boilers and the negligible make-up for the cooling water.

The initial expense and the lack of full appreciation of the enormous saving in maintenance accomplished by this system explains the lack of such installations in this territory.

The Closed Cooling System

I venture to say that when the industry is awakened to the possibilities of the closed system, all new plants will be so equipped and present plants transformed where expedient, unless the water is unusually free from mineral matters.

In the present type of plant, where no provision has been made for closed cooling systems, the enormous amount of water that would have to be treated may make questionable the use of either the evaporator or softener. Each plant must needs be studied by itself, and the present expense, volumes handled, and gasoline and revenue produced should all have weight on the question of deciding on an installation.

It is my opinion that where raw water is used in an open system, there is only one way to protect the coil headers even when using some kind of water treatment, and that is to clean them and paint them with high heat-test paint, if necessary once a week, although once a month will catch most conditions.

While it is true that most paints will come off, yet the cleaning and fresh paint, the smooth surface effected, will retard corrosion. It will not let rust get a "toe-hold" until the next cleaning. Once rust has taken a firm hold, the game is up. If the coils have been neglected for a long time, it is probable that the removal of the rust coating will develop a hole and leak. Invariably, when the personnel of a plant is admonished on this score, the answer is that it is dangerous to remove the rust as the pipe is so thin that a hole will show up.

However, if rusting has taken hold, the intelligent use of a small hammer will develop the true condition of the pipe and whether or not the same can be scaled and painted, or must be replaced, can be determined. **The Paramount Thing is Not to Allow the Condition to Get Out of Control.**

In addition to rusting, water causes another evil, previously referred to as scale, caused by the deposit of salts held in solution by the water. The treatment of water by chemical reacting agents to prevent scaling has been found to be more or less successful. Yet, even under the best conditions with the use of compounds, scale will form. Two kinds of scale appear under different conditions.

One form of scale is soft, muddy, and massy. In some instances a solution of blue vitriol circulated with the spray water will remove it. The surest means, however, is by the use of a high pressure water hose augmented by a broom. If this soft accumulation is periodically removed, not only will hard scale not form, but a generally efficient cooling system will be noted.

A further result will be a more wholesome appearing plant, free from the foul adors which this slush produces. (It should be added that the mud and dirt and scum from the pit and surfaces of the tanks should be removed, and the water changed as necessity may demand). Too often you will find that the water in the coil pits and tanks is seldom changed. The good water is evaporating all the time while the minerals remain, forming a highly concentrated scale-forming fluid that is really not water.

Hammers Remove Scale

Hard scale can generally be removed by air hammers or just ordinary hammers. Vibration of the pipe will cause the scale to break off. In other cases, chemical solutions have been found to soften the scale and make it possible to wash off, as previously mentioned. Care must be taken that the compound used only should eat away the precipita-

tion and not affect the rust or iron. Too rapid action and removal of rust often exposes many holes and develops leaks. What is to be aimed at is the prevention of new scale and the removal of scale, not the removal of steel. Although this seems perfectly obvious, it is a difficult idea to get over to some of the venders of antiscale preparations.

No one would attempt to gainsay the fact that good results have been accomplished by several of the leading chemical companies who are selling chemicals and service in connection with the water treating, while on the other hand quack remedies are on the market. A sort of lethargy has existed with reference to water treatment for this reason. The panacea for the elimination of all water troubles did not perform.

No doubt, a good bit of the trouble is accounted for by the fact that we expected immediate results and 100 per cent improvement of conditions without lending very much cooperation or applying very much care to the proper use and application of the chemicals even after we bought them and paid for them.

Often as not, do we not buy a barrel of chemicals and ship it to a plant where particularly bad conditions prevail and expect the plant to "use it"—without having made proper provision for its use? How many of us have seen so much of boiler compound thrown into the hot pit spasmodically, or so much of a chemical into the coil pit—and then feel we had given the thing a chance and concluded that the darned stuff would not work, only to repeat the process a year later at a different plant, but perhaps with a different chemical from the different concern?

Proper Analysis Necessary

If you have not proper facilities for performing the analysis necessary, I should think you would go to some reliable concern that specialized in water treatment. It would eliminate offhand and without formalities those folks who have a remedy without reference to your water. The chances are they have something that will eat away the innards of your equipment and will prevent scale at too great an expense. Then carry out the recommendations of the chemist.

These recommendations will probably be confined to the installation of a home-made water softener. The reason will immediately suggest itself. He will want a tank in which to treat the water so that what salts are precipitated will remain in the tank and not in the circulating system. If you are to treat boiler-feed water, he will want two tanks to be used intermittently. He will want to neutralize the water before it goes into the boiler. This is your crude softener—and you are treating water by the batch system.

This installation is sometimes avoided because the topography of the plant is not such as to permit gravity flow from the treating tank to the system and the general desire to get away from additional pumps, or more often because of the expense of treating. In that event, if it is considered inexpedient to install the closed system, scale is permitted to form, later to be removed from coils as already discussed, and from engine jackets and knock-out boxes by means of an acid or by a widely used chemical designated by a formula of one of the large chemical concerns.

Scale Danger Overestimated

The formation of a little scale is not as detrimental to a gas engine as commonly supposed. It may be entirely justifiable to wait until scale has formed to such an extent that heat transfer is beginning to be affected to a noticeable extent before the engine is boiled out.

The danger of this system lies in its susceptibility to negligence, the chance that the cleaning will not be performed until damage has been done. In an organization worth the name, this should not be an important consideration, and with proper supervision this system can be made productive of efficient and economical organization.

In the use of any acid, great care must be taken to see that too strong a solution is not used. The strength of the solution must be calculated on the basis of the thickness and kind of scale to be removed. A 50-50 solution, which is comparatively strong, is generally used, as the "acid treating" is usually delayed until the equipment has reached the stage where heat transfer or cooling has been materially diminished by the insulating effect of the scale.

Too much precaution cannot be taken to see that the engine water jacket is promptly washed out with water after the "boiling out solution" has been drained. The air coming in contact with the acid, if not immediately washed out, will cause the metal to be eaten out due to oxidation, which is the detrimental reaction of an acid.

Hydrochloric Acid Dangerous

The use of so-called "spent" hydrochloric acid in the spray system, after it has been used in descaling engine water jackets, is dangerous, and discouraged. Often as not, the acid is not spent and retaining it in the system, however diluted, exposes coils, sprays, and water pumps to too great a danger.

In general, the combating of this natural enemy—bad water—can be overcome or kept in check only by the zealous and untiring efforts of the plant operators in safeguarding the machinery. This effort must be applied in the primary stage, and should be continued unabated at proper intervals during the life of the plant. Otherwise corrosion and deterioration will gain headway and necessitate a capital expenditure for the replacement of spent machinery or equipment long before it has rendered the service to be expected of it.

I have intentionally failed to discuss the saving of exhaust steam around a plant because this is being done almost universally. In some cases, the steam is passed through a closed condenser-evaporator which not only condenses the exhaust steam, but also evaporates some water which increases the supply of make-up water for the boilers and at the same time preheats the boiler-feed water.

In some of the older stations, a crude hot pit serves to preheat the make-up water by passing the steam in under it and at the same time condenses most of the exhausted steam coming from stills and pumps. Water from the knock-out which represents condensed steam injected into saturated oil in the preheater or still, together with water from the waterleg or accumulator tanks, further augment the supply of distilled water for use in boilers.

Boilers Need Good Water

Particular stress is laid on the necessity of having good water for boiler use, not only because of the direct and quick harm that can be done on account of scale in the boiler, but because, moreover, of the ineffective operation of stills in which live steam is used with boiler-feed water which causes foaming.

An impure water carried over into the still upsets the operation and causes a product difficult to correct. The amount of water carried over into the still causes the oil and this water to boil instantaneously, and invariably a considerable amount of mineral seal oil is carried over into the vapor line and ultimately into gasoline storage, because the knock-out box or dephlegmator, being overtaxed, cannot take care of all the excess oil, and permits it to go through with the gasoline vapors.

There has recently appeared in this territory a new method of scale prevention known as "Anti-scale," in which an electric current generated by a thermodynamic cell, is the agency. A battery of the size required by the particular piece of equipment is connected to the exhaust, in the case of a gas engine, and to the steam outlet of a boiler for the purpose of providing the necessary heat for the generation of the electric current, and the terminals are connected by means of electric cords to the engine or boiler, as the case may be, so that all of the equipment will come within the range of the generated current. In the case of a boiler the terminals are connected to the blow-off line and to the water inlet, while in a gas engine the water intakes of the compressor and engine are used. In this way the engine jacket and the boiler shell and flues lie in the area through which the current must needs pass.

Claims of Licensees

It is contended by the licensees of this antiscale equipment that the current of so many miliamperes set up and present on the water surfaces make for a reversal or neutralizing of the process of corrosion. The current creates a back pressure behind the scale and removes it, and from then on prevents the adhesion of new particles of scale on the hot surfaces. Inasmuch as results were guaranteed and installations offered to

be made without cost, it was not necessary for any of us to run any risk with these experiments, and because no expense to us was involved we were not as much interested in the theory and pretenses of the vendors of the equipment as much as we were in the results.

Nor am I now interested so much in the cause and effect as in the results which we have experienced in our own plants and in what we may reasonably expect in the future. We have permitted one of these installations in several of our plants on both boiler batteries and gas engines and I am constrained to permit our own experience to guide us in the future. A five months' experience has shown us that under varying conditions of operations, where we had been in the habit of expecting scale in our boilers and where we were obliged to clean our boilers every 10 days, we have found that this equipment has absolutely prevented any scale from forming. Suspecting, as we did, that perhaps the nature of the water had changed, we not only caused a complete analysis to be made but, in fact, removed the terminals and operated for several weeks without the equipment and found a gradual reappearance of the hard calcium scale which we had previously experienced.

While we have found in every instance of shut-down a perfectly clean shell in our boilers, we are not yet thoroughly sold on this method of scale prevention because of a new trouble that we were made to face by the elimination of scale. I have reference to corrosion of all surfaces as soon as they come in contact with the air upon opening of the boiler and cleaning out such fine dirt or mud that may have accumulated and which was not expelled through the boiler blow-off.

This is indeed a most serious matter. Some means must be found to eliminate this corrosion. We are endeavoring to do this by the injection into the boiler of sodium silicate which is claimed will coat the hot surfaces within the boiler with a thin film of protection against contact with air. If this process is successful we, at least, will be willing to believe that a sure means of scale prevention in boilers has been found. Meanwhile, we disconnect the boilers several days before they are shut down for inspection and permit a protecting scale to form.

Our experiment with a gas engine has not been successful. However, I wish to point out the fact that this engine was one of the battery of 23 and that there can be no doubt that the generated current leaked by the machine and was spent upon some of the others in the battery. Experiments are being made by the American licensees of the patents with a gas engine in an isolated station, and I cannot see why satisfactory results will not be found for the conditions are certainly similar to that in a boiler and good results in the one case should be a criterion for all classes of equipment of this kind, including even closed condensing units.

The crux of the problem will be the definite attainment of knowledge with respect to the current necessary for the protection of the particular piece of equipment, the prevention of corrosion and the practical perfection of insulating from other metal equipment the units that it is desired to protect.

The initial cost is high but is, undoubtedly, necessary on account of the expense of experiment that had to be performed and the scarcity of sales. I, for one, am hoping that if the thermodynamic cell proves its utility, the cost thereof may be reduced to such an extent that we can unhesitatingly recommend them to our several concerns. A close examination of the equipment reveals little, if any possibility of deterioration of the cell and, inasmuch as there is no expense involved in upkeep, the application with respect to our industry in the various ways that it can be used, can be made to pay dividends by the saving of shutdown hours and the protection of our engines and boilers from extreme abuse.

I do not want to be put in a position of holding the brief for this particular kind of anti-scale, but on the other hand, I can picture no greater pleasure in Heaven than that of operating a gasoline plant or a number of plants without the grief incident to water, and without the necessity of eternally analysing the water with respect to the increasing or decreasing amount, and the nature of the mineral solids, etc. therein, and the necessity of regulating the amount and kind of reacting agents to bring about, at best, only temporary relief. In the one case (I am assuming, of course, the certain proof of the success of this anti-scale) 100 per cent functioning is affected without the personal element; whereas, in the second case, we are depending for results upon the diligence and understanding, and the cooperation of water analysis, plant operators, and the adaptibility of the chemicals.

On the one hand we have a high first cost without upkeep; on the other, a small initial investment and a continuous maintenance bill, and an ever-diligent watchfulness and attention.

I hope that I have not made anyone present feel that the most important thing in connection with the successful manufacture of gasoline is good water and scale prevention. I am afraid that anyone reading a paper at a conference or convention is apt to feel that the most important paper and the most important subject in his paper and his subject.

And yet, I confess, that I have wanted to point out, in no mistaken terms at least, my own belief that no one detail in connection with the construction and operation of a gasoline plant deserves more consideration on the part of the designer, and him upon whom it devolves to project the plant. Study all the possible sources of water; study that water, and if an analysis points to encrusting solids, before deciding on which source you will definitely provide, do not only ascertain the initial cost but take a look down the line of years and see the ultimate cost. Do not, for the sake of a few thousand dollars, force upon your plant the burden of monthly expense that, in the last analysis, eats into the very foundations of your profits.

Remember, when making your investments, that good water is your best friend; that bad water is the arch enemy of our industry.

Suit Filed to Test Ohio Gasoline Tax Act

CLEVELAND, April 28.—Suit to test the validity of the two-cent gasoline tax in Ohio has been filed in the courts at Columbus by the Ohio State Automobile Association against state officials and the Central Ohio Oil Co. George J. Karb, president of the Central Ohio Oil Co., is president of the Ohio Petroleum Marketers Association.

An effort is being made to get a referendum on the tax measure. Proponents of the Ohio statute say their measure is "iron-clad" and that it cannot be submitted to a popular vote.

A demurrer was to be filed by the defendants today. In this manner quick action is hoped for in the courts.

Conspiracy Case Booked for Hearing May 8

CHICAGO, April 27.—The conspiracy case of the United States against 51 defendent oil companies, has been called and is scheduled to come up for first hearing before a master in Chicago on May 8. This is the case in which the government attacks gasoline cracking process "Patent Club" as a combination in restraint of trade. It is case No. 4131 in the Federal Court, northern district of Illionis, officially styled the United States vs. the Standard Oil Co. et al.

The master in chancery is Charles Martindale of Indianapolis, appointed in federal court here on March 13. There are five primary defendants who are owners of cracking processes, and there are 46 secondary defendants who are licensees of the processes owned by some of the other five. The five main defendants are the Standard Oil Co. of New Jersey, the Standard Oil Co. of Indiana, the Standard Development Co., The Texas Co., and the Gasoline Products Co. The case was filed June 25, 1924 and legal maneuvering has consumed the subsequent 10 months.

Edward J. Hess of the United States Attorney's office, assistant to the District Attorney Edwin A. Olson, will be active in the case. His activities are usually required in consipracy cases. Abrams F. Meyers of Washington, D. C., special assistant to the attorney general of the United States will also be active in the case, it is believed.

Registrations at Fourth Annual Convention Association of Natural Gasoline Manufacturers

J. Q. Adams, Roxana Petroleum Corp., Tulsa.
O. O. Adkins, Titusville Forge Co., Titusville, Pa.
A. E. Aggas, Zenith Limestone Co., Tulsa.
O. S. Ambrose, Tidal Oil Co., Tulsa.
W. O. Anders, Pure Gasoline Co., Tulsa.
T. C. Andrews, American Car & Foundry Co., St. Louis.
H. Bruce Anson, Altitude Petroleum Co., Tulsa.
B. J. Arbon, Southland Gasoline Co., Tulsa.
T. E. Armstrong, Skelly Oil Co., Tulsa.
H. H. Aurswald, Gypsy Oil Co., Tulsa.
P. O. Baker, Chestnut & Smith, Keifer, Okla.
W. R. Barrett, Phillips Petroleum Co., Tulsa.
L. F. Bayer, Tidal Refining Co., Tulsa.
E. F. Bay, Tribes Gasoline Co., Tulsa.
H. J. Bauer, Pacific Gasoline Co., Los Angeles, Calif.
A. M. Ballard, Twin State Oil Co., Tulsa.
Lloyd Baldwin, H. F. Wilcox Oil & Gas Co., Tulsa.
R. E. Baker, Roxana Petroleum Co., Tulsa.
D. B. Banks, 610 Arroyo Drive, Pasadena, Calif.
C. R. Barton, Tidal Refining Co., Tulsa.
C. L. Baker, The Texas Co., Tulsa.
G. Barrett, Phillips Petroleum Co., Wetumka, Okla.
O. J. Berend, Skelly Oil Co., Tulsa.
Howard Bennette, Western Petroleum Refiners Ass'n, Tulsa.
H. B. Bernard, Sinclair Oil & Gas Co., Tulsa.
W. Bemerkemp, Skelly Oil Co., Tulsa.
R. D. Best, Phillips Petroleum Co., Breckenridge, Tex.
O. J. Best, Refinery Supply Co., Tulsa.
D. F. Berta, Wolverine Petroleum Co., Avant, Okla.
F. M. Bennett, Forest E. Gilmore Co., Tulsa.
H. L. Berkey, Sharples Specialty Co., Tulsa.
M. A. Bigelow, Orific Gasoline Co., Tulsa.
R. E. Bishop, Noble Oil & Gas Co., Tulsa.
B. E. Blankenship, Liquified Pet. Gas Co., Tulsa.
S. G. Blair, The Texas Co., Tulsa.
Roy Bower, Romarti Gasoline Co., Denoya, Okla.
O. V. Borden, Purchasing Agents Ass'n, Tulsa.
J. H. Boyle, Chestnut & Smith, Tulsa.
A. V. Bourque, Ass'n Natural Gasoline Manufacturers, Tulsa.
G. H. Bellman, Sun Oil Co., Dallas.
B. E. Bond, Romarti Gasoline Co., Tulsa.
R. P. Bowlind, Skelly Oil Co., Tulsa.
Joe Boyd, Phillips Petroleum Co., Bartlesville, Okla.
J. R. Bradley, Stoutz & Ford Gas. Co., Nuskogee, Okla.
C. E. Brown, Warren Petroleum Co., Tulsa.
C. M. Bryson, Bellby Gasoline Co., Tulsa.
G. M. Brigham, North American Car Co., Tulsa.
J. V. Brazier, Barnsdall Refining Co., Barnsdall, Okla.
C. F. Braun, C. F. Braun & Co., Alhambra, Calif.
L. W. Brown, Fisher Governor Co., Marshaltown, Ia.
F. E. Burke, Chestnut & Smith, Tulsa.
F. W. Burford, Skelly Oil Co., Tulsa.
G. P. Bunn, Phillips Petroleum Co., Bartlesville.
N. Bushnell, Oil Producer, Tulsa.
A. W. Burket, C. F. Braun Co., Tulsa.
D. E. Buchanan, Chestnut & Smith Corp., Tulsa.
R. C. Burris, Five Civilized Tribes, Muskogee, Okla.
P. A. Burch, Chestnut & Smith Corp., Tulsa.
E. Buddrus, Phillips Petroleum Co., Breckenridge, Tex.
W. E. Bullouck, American Society of Mechanical Eng., N. Y.
J. F. Byas, Lone Star Gas Co., Brazos, Tex.
F. L. Carmichael, Continental Supply Co., Tulsa.
E. S. Calvert, Oklahoma Eastern Oil Co., Tulsa.
O. A. Carter, Phillips Petroleum Co., Pershing, Okla.
H. R. Campbell, Phillips Petroleum Co., Bartlesville.
S. C. Carney, Roxana Petroleum Co., Tulsa.
C. F. Campbell, Roxana Petroleum Co., Tulsa.
S. L. Calhoun, Oil Trade Journal, Inc., Tulsa.
B. P. Cavner, Oklahoma Gasoline Plants, Inc. Oklahoma City.
V. C. Canter, Gasoline Recovery Corp., Tulsa.
J. F. Carter, Gulf Publishing Co., Tulsa.
H. W. Camp, Empire Refineries, Tulsa.
S. C. Cameron, Noble Oil & Gas Co., Tulsa .
F. L. Chase, Lone Star Gas Co., Dallas.
E. R. Cheeka, Portland Cement Co., Dewey, Okla.
J. C. Chatfield, National Petroleum News, Tulsa.
Thomas Chestnut, Chestnut & Smith Corp., Tulsa.
G. A. Chaner, Carter Oil Co., Tulsa.
Perry Christlied, Sand Springs Home, Sand Springs, Okla.
W. F. Clausing, Highway Oil & Refining Corp., Tulsa.
R. H. Clark, Phillips Petroleum Co., Bartlesville.
Kenneth Clark, Waite Phillips Co., Tulsa.
L. P. Clarke, Phillips Petroleum Co., Shidler, Okla.
O. H. Clement, Skelly Oil Co., Bristow, Okla.
W. N. Corbet, Eagle Picher Lead Co., Henryetta, Okla.
R. E. Cornwell, Carbide & Carbon Chemical Corp., Tulsa.
R. M. Coyle, Chestnut & Smith, Corp., Tulsa.
W. B. Cornell, Allied Chemical Co., Dallas.
P. C. Coffin, Lone Star Gas Co., Petrolia, Tex.
L. C. Converse, Lynn C. Converse Co., Tulsa.
E. C. Cook, Oil State Gasoline Co., Beggs, Okla.
A. D. Cooper, Tidal Oil Co., Tulsa.
A. B. Cox, Chestnut & Smith Corp., Tulsa.
J. W. Cowles, Skelly Oil Co., Tulsa.
H. M. Coulson, Sinclair Gasoline Department, Cleveland, Okla.
J. O. Colclasure, Chestnut & Smith, Keifer, Okla.
R. H. Cosby, Wolverine Petroleum Corp., Tulsa.
S. B. Brooks, Empire Gasoline Co., Bartlesville.
John Cronin, Skelly Oil Co., Slick, Okla.
J. W. Crowe, Chestnut & Smith Corp., Tulsa.
F. H. Crawford, E. I. Du pont de Nemours & Co., Chicago.
S. V. Craig, Comar Gasoline Co., Tonkawa, Okla.
T. J. Crowley, Oil & Gas Journal, Tulsa.
Dan Craig, Bessemer Gas Engine Co., Grove City, Pa.
Bill Cummings, Clark Brothers, Tulsa.
G. M. Davidson, Empire Gasoline Co., Bartlesville.
L. J. Dales, Phillips Petroleum Co., Homer, La.
R. E. Day, Magneto Ignition Corp., Tulsa.
R. B. Daugherty, Barnsdall Oil Co., Tulsa.
R. R. Dean, Waite Phillips Co., Tulsa.
W. E. DeYarmet, Chiefton Gasoline Co., Tulsa.
John C. Deihl, Metric Metal Works, Erie, Pa.
R. W. Drake, Independent Gas & Meter Tester, Tulsa.
C. F. Dowd, Tidal Refining Co., Tulsa.
F. B. Dunlap, Bessemer Gasoline Co., Tulsa.
Jack Duffy, Tidal Refining Co., Tulsa.
A. W. Dwen, Amerada Petroleum Co., Tulsa.
J. L. Dwyer, Oil & Gas Journal, Tulsa.
Don V. Eels, Empire Refineries, Bartlesville.
William R. Eckart, Stanford University, Palo Alto, Calif.
W. C. Elliott, Rotary Gasoline Co., Tulsa.
John Ellington, Chestnut & Smith Corp., Tulsa.
W. D. Emery, Max B. Miller Co., Tulsa.
V. N. Embrey, Sand Springs Home & Oil Co., Sand Springs, Okla.
J. F. Epperson, Skelly Oil Co., Tulsa.
E. L. Estes, E. I. Du pont de Nemours & Co., Kansas City.
O. W. Evrett, Mayo Hotel, Tulsa.
C. J. Fawlston, Romarti Gasoline Co., Denoya, Okla.
J. F. Farrington, National Supply Co., Tulsa.
Jesse Finston, Altitude Petroleum Co., Tulsa and Chicago.
J. B. Fink, Consulting Engineer, Tulsa.
M. E. Foster, Phillips Petroleum Co., Bartlesville.
A. L. Forquer, Amerada Petroleum Corp., Tulsa.
E. L. Ford, Phillips Petroleum Co., Shidler, Okla.
H. A. Frame, National Prod. Co., Tulsa.
E. J. Freeman, Petroleum Prod. Co., Tulsa.
M. L. Freese, Altitude Petroleum Co., Tulsa, and Chicago.
C. K. Francis, Tulsa.
Austin Gavin, Altitude Petroleum Co., Tulsa.
Clara Gartman, Skelly Oil Co., Tulsa.
Emil Geppelt, Sr., Aathorn Oil & Gasoline Co., Tulsa.
J. S. Gifford, Skelly Oil Co., Tulsa.
J. K. Gibson, Phillips Petroleum Co., Henryetta, Okla.
F. E. Gilmore, Forrest E. Gilmore Co., Tulsa.
F. L. Gleson, Phillips Petroleum Co., Bartlesville.
L. H. Gorton, Roxana Petroleum Co., Tulsa.
J. L. Goddard, Elm Oil Co., Tulsa.
W. H. Gray, Tribes Gasoline Co., Tulsa.
D. L. Greenleaf, Bartlett Hayward Co., Baltimore.
H. S. Green, Tulsa.
M. H. Griffith, Skelly Oil Co., Tulsa.
W. W. Grimes, Tidal Refining Co., Tulsa.
Geo. Hayden, Phillips Petroleum Co., Pawhuska, Okla.
Willis Hays, Sand Springs Home, Sand Springs, Okla.
Frank Haldy, Sinclair Oil & Gas Co., Tulsa.
J. M. Hayner, Hayner Petroleum Co., Tulsa.
E. F. Hastings, Barnsdall Oil Co., Barnsdall, Okla.
C. S. Hansard, Wolverine Petroleum Co., Avant, Okla.
W. G. Hanrahan, Vacuum Oil Co., Tulsa.
E. I. Hanlon, Hanlon Gasoline Co., Tulsa.
J. M. Hall, Oil State Gas Co., Tulsa.
F. C. Hall, Henderson Co., Tulsa.
M. A. Henley, Westcott & Greis, Tulsa.
P. S. Hedrick, Tulsa World, Tulsa.
R. W. Hendee, Oklahoma Natural Gas Co., Tulsa.
H. B. Hicman, Arkansas Fuel Oil Co., Eastland, Tex.
H. H. Howard, Allied Chemical Co., Dallas.
I. V. Horner, Industrial Const. Co., Tulsa.
John W. Hogan, Hogan Prod. & Ref. Co., New Orleans.
J. E. Hobbins, Blackmer Rotary Pump Co., Chicago.
C. E. Holt, The Sun Co., Tulsa.
J. E. Hut, Metropolitan Refining Co., New York.
John W. Hurley, Hurley Gasoline Co., Tulsa.
D. A. Hurley, Hurley Gasoline Co., Tulsa.
Howard Hunter, Southern Carbon Co., Monroe, La.
E. B. Huff, McKinney & Huff, Tulsa.
T. F. Hudgins, C. & G. Cooper Co., Tulsa.
C. E. Hurley, Hurley Gasoline Co., Tulsa.
A. W. Hubbell, Phillips Petroleum Co., Bartlesville.
Frank W. Hull, The Bessemer Gas Engine Co., Grove City, Pa.
E. B. Huston, Pulaksi Oil Co., Tulsa.
R. L. Huntington, Skelly Oil Co., Slick, Okla.
E. C. Hughes, Hurley Gasoline Co., Breckenridge, Tex.
C. K. Hutchinson, Pierce Petroleum Corp., Tulsa.
R. P. Ingram, Chestnut & Smith Corp., Sand Springs, Okla.
G. F. Isley, Roxana Petroleum Corp., Gas Dept., Tulsa.
Paul Jacks, Sand Springs Home, Sand Springs, Okla.
H. H. James, E. I. Du pont DeNemours & Co., Wilmington, Del.
A. W. Jastrow, Barnsdall Oil Co., Tulsa.
J. R. Jarvis, Lone Star Gas Co., Dallas.
D. A. Jepson, Transcontinental Oil Co., Tulsa.
J. A. Johaness, Phillips Petroleum Co., Bartlesville.
R. M. Jones, Tulsa Boiler & Machine Co., Tulsa.
E. G. Johnson, E. I. Du pont de Nemours & Co., Chicago.
A. S. Johnson, Sun Oil Co., Dallas.
H. R. Johnson, Akin Gasoline Co., Tulsa.
Clarence Johnson, Skelly Oil Co., Wynona, Okla.

Henry Jungerman, O. J. Tagliabue Mfg. Co., Brooklyn, N. Y.
Leo Kaufman, Southern Chemical Mfg. Co., Tulsa.
Emby Kaye, Skelly Oil Co., Tulsa.
F. F. Ketchum, The Owens Libbey Owens, Charleston, W. Va.
F. C. Ketner, Liquified Petroleum Gas Co., Tulsa.
L. T. Kersey, Mid-Continent Oil & Gas Assn., Tulsa.
A. J. Kerr, Foxboro Co., Tulsa.
P. G. Kennett, E. I. Du pont de Nemours & Co., Chicago.
Larry Kennedy, Reading Steel Casting Co., Tulsa.
O. Kelly, Key Boiler & Equipment Co., Tulsa.
P. A. Kelly, Cosden Oil & Gas Co., Tulsa.
J. W. King, Sand Springs Home, Sand Springs, Okla.
O. F. Kluenter, American S. & B. Corp., Tulsa.
P. J. Kroll, Looboyle Refining Co., Quapaw, Okla.
M. H. Kottzebue, Tulsa Boiler & Machine Co., Tulsa.
L. O. Kuhn, Northern Pump Co., Minneapolis, Minn.
T. G. Laney, Smith Separator Co., Tulsa.
W. H. Ladley, Tank Car Gauge Co., Pittsburgh.
L. Lamar, Wolverine Oil & Gas Corp., Wilson, Okla.
J. A. LaFortune, Warren Petroleum Co., Tulsa.
C. E. Lermond, Gasoline Recovery Co., Tulsa.
E. R. Lederer, Texas-Pacific C. & O. Co., Fort Worth.
T. I. Lee, Allied Chemical Co., Dallas.
J. O. Lewis, Western Machinery Co., Tulsa.
E. C. LeFevre, Empire Gasoline Co., Bartlesville.
W. R. Lentz, Chestnut & Smith, Tulsa.
Ben. E. Lindsley, U. S. Bureau of Mines, Bartlesville.
Wm. H. Little, National Petroleum News, Tulsa.
F. F. Lockwood, F. F. Lockwood Co., Tulsa.
E. F. Lundy, Roxana Petroleum Corp., Tulsa.
C. E. Mason, Akin Gasoline Co., Tulsa.
A. F. Maxon, Sun Oil Co., Tulsa.
B. J. Manley, Sand Springs Home, Sand Springs, Okla.
L. B. Mann, Roxana Petroleum Corp, Stroud, Okla.
S. F. Mauney, Jr., Carter Oil Co., Tulsa.
D. G. Mechling, Tidal Refining Co., Tulsa.
W. A. Melton, J. A. Hull Co., Tulsa.
E. E. McCollum, Phillips Petroleum Co., Pershing, Okla.
Tom McGuire, Boudinot Gasoline Corp., Breckenridge, Tex.
R. M. McCutchin, Oil State Gasoline Co., Tulsa.
D. W. McKay, Hope Engineering & Supply Co., Tulsa.
H. W. McCullah, H. F. Wilcox Co., Tulsa.
Rex McRoy, Phillips Petroleum Co., Shidler, Okla.
James McIntyre, Oil & Gas Journal, Tulsa.
G. U. McKinney, McKinney & Huff, Tulsa.
E. F. McIntyre, International Petroleum Exposition, Tulsa.
R. A. McIntyre, Oil State Gas Co., Tulsa.
G. L. McCormack, Roeser & Pendleton, Breckenridge, Tex.
H. R. McCreary, Oil Conservation Eng. Co., Tulsa.
R. K. McConnell, Phillips Petroleum Co., Wewoka, Okla.
J. M. McLain, Atlas Supply Co., Muskogee, Okla.
R. L. McLain, Atlas Supply Co., Muskogee, Okla.
P. P. McKirahan, Continental Tank Car Co., Tulsa.
J. H. McMahon, Producers & Refiners Corp., Tulsa.
O. B. Miller, Phillips Petroleum Co., Burbank, Okla.
R. E. Miller, Mid-Continent Oil & Gas Ass'n, Tulsa.
R. L. Mitchell, Twin State Oil Co., Tulsa.
H. F. Miller, Carter Oil Co., Tulsa.
D. C. Miller, Oil State Gas Co., Tulsa.
C. J. Minnig, Phillips Petroleum Co., Bartlesville.
A. B. Morris, Chestnut & Smith, Tulsa.
J. W. Mooney, Skelly Oil Co., Tulsa.
C. Morris, Oil & Gas Journal, Tulsa.
D. W. Moore, Oil Trade Journal, Tulsa.
J. R. Morphew, Tidal Refining Co., Ochelata, Okla.
R. L. Morris, Tidal Oil Co., Tulsa.
M. E. Mockley, Amerada Petroleum Corp., Tulsa.
J. A. Morgan, Chestnut & Smith Corp., Tulsa
S. E. Murphy, Empire Refinery, Inc., Tulsa.
N. M. Muri, J. F. Prichard, Tulsa.
C. W. Mullalley, Arkansas Fuel Oil Co., Shreveport, La.
J. P. Mulkern, Oil & Gas Journal, Tulsa.
H. B. Neal, Gypsy Oil Co., Tulsa.
R. O. Neal, D. B. Mason Co., Tulsa.
A. H. Neal, Skelly Oil Co., Slick, Okla.
C. E. Nelson, Stebbins Oil & Gas Co., Tulsa.
O. C. Nelson, Roxana Petroleum Corp., Yale, Okla.
D. L. Newton, Newton Process Mfg. Co., Fullerton, Calif.
B. M. Nowery, Palmer Corp., Shreveport, La.
I. E. Nutter, Phillips Petroleum Corp., Stroud,, Okla.
D. G. Oberfell, Phillips Petroleum Co., Bartlesville.
Anthony Olansen, Chestnut & Smith Corp., Tulsa.
Daniel Olansen, Chestnut & Smith, Kiefer, Okla.
R. R. Owens, Marland Refining Co., Ponca City, Okla.
W. E. O'Meilia, Westcott & Greis, Tulsa.
C. A. O'Donovan, Oklahoma Eastern Oil Co., Tulsa.
R. W. Patterson, North American Car Co., Tulsa.
I. P. Parkhurst, Empire Gasoline Co., Bartlesville.
E. L. Peck, Empire Gasoline Co., Bartlesville.
Frank Peterson, Cosden & Co., Tulsa.
J. P. Phillips, Worthington Pump & Mach. Corp., Buffalo, N.Y.
A. J. Pfister, Bell Oil & Gas Co., Tulsa.
Norris Plank, Roxana Petroleum Corp., Tulsa.
W. C. Platt, National Petroleum News, Cleveland, O.
B. L. Potter, Bessemer Gas Engine Co., Tulsa.
James Porter, Empire Gasoline Co., Carney, Kan.
M. F. Powers, Victor Gasoline Co., Tulsa.
R. T. Powers, Empire Gasoline Co., Bartlesville.
H. V. Price, Oil State Gasoline Co., Yale, Okla.
P. P. Prandstetten, Vacuum Oil Co., Nadworma, Poland.
F. R. Quast, Empire Gasoline Co., Webb City, Okla.
Felix Quinlan, Powers & Quinlan, Beggs, Okla.
H. F. Quinlan, Chestnut & Smith Corp., Tulsa.
L. S. Randolph, Randolph Petroleum Co., Tulsa.
L. W. Ray, Romarti Gasoline Co., Tulsa.
W. F. Reich, Carbide & Carbon Chem. Co., Tulsa.
W. E. Reardon, Southern Carbon Co., Monroe, La.
K. L. Reynolds, Pacific Gas Co., Los Angeles.
F. L. Rhodes, Palmer Corp., Shreveport. La.
A. Riker, Tidal Refining Co., Tulsa.
Chas. Rippy, Tidal Refining Co., Glenn Pool, Okla.
F. E. Rice, Phillips Petroleum Co., Bartlesville.
Armand L. Rizan, Power Machinery Co.
Robert Rose, General American Tank Car Co., Tulsa.
D. A. Robbins, Bessemer Gas Engine Co., Tulsa.
J. D. Roberts, Lone Star Gas Co., Gainesville, Tex.
R. A. Routsong, Gypsy Oil Co., Drumright, Okla.
R. R. Rosier, Akin Oil Co., Tulsa.
F. W. Robertson, Skelly Oil Co., Tulsa.
Andrew M. Rowley, Oil & Gas Journal, Tulsa.
L. C. Ritts, Oklahoma Eastern Oil Co., Tulsa.
C. E. Rumney, Phillips Petroleum Co., Bartlesville.
J. H. Satterwhit, Westcott & Greis, Tulsa.
S. G. Sanderson, Gypsy Oil Co., Tulsa.
W. S. Sanders, Transcontinental Oil Co., Morris, Okla.
H. G. Schively, Akin Gasoline Co., Tulsa .
W. J. Schnur, Noble Oil & Gas Co., Tulsa.
W. A. Schlueter, The Refinery Supply Co., Tulsa.
M. A. Schellhardt, Osage Indian Agency, Pawhuska, Okla.
G. C. Schaffer, G. M. Blackmer Rotary Pump Co., Chicago.
Paul Schafer, H. L. Wilcox, Oil & Gas Co., Tulsa.
J. W. Schott, National Petroleum News, Tulsa.
A. J. Schlosser, Barnsdall Oil Co., Tulsa.
O. H. Schomwald, Wentz Oil Corp., Ponca City, Okla.
Elmer Schmidt, Lone Star Gas Co., Dallas.
L. H. Sexton, Phillips Petroleum Co., Bartlesville.
I. B. Semke, Pierce Petroleum Corp., Tulsa.
M. I. Shigley, United Central Oil Corp, Tulsa.
R. J. Sharp, General American Tank Car Co., Tulsa.
R. I. Short, Prairie Oil & Gas Co., Tulsa.
J. B. Simler, Bruce-MacBeth Engine Co., Cleveland, O.
G. C. Simpson, Chestnut & Smith, Corp., Tulsa.
R. S. Singer, Phillips Petroleum Corp., Stroud, Okla.
W. E. Sloan, Tulsa.
M. T. Smith, Sand Springs Gasoline Co., Sand Springs, Okla.
A. L. Smith, Home Gas Co., Sand Springs, Okla.
G. B. Smith, Westcott & Greis, Tulsa.
S. S. Smith, Roxana Petroleum Corp., Tulsa.
P. H. Shunkey, Indian Territory Illumin. Oil Co., Bartlesville.
W. S. Smith, Miller Gas Engine Co., Tulsa.
W. W. Smyers, Chestnut & Smith Corp., Tulsa.
J. L. Smith, Allied Chemical Co., Dallas.
T. K. Smith, Chestnut & Smith, Tulsa.
C. E. Smith, Roxana Petroleum Corp., Covington, Okla.
H. B. Smith, Roxana Petroleum Corp., Avant, Okla.
A. C. H. Snyder, The Orific Gasoline Prod. Co., Tulsa.
J. M. Story, Hesco Gasoline Co., Tulsa.
T. A. Stevens, Owen Gasoline Co., Caney, Kan.
C. N. Stinnett, Sand Springs Home, Sand Springs, Okla.
C. A. Stanfield, Orific Gasoline Co., Tulsa.
E. E. Stepp, Oil State Gasoline Co., Tulsa.
S. R. Stone, Refinery Supply Co., Tulsa.
R. E. Stewart, Barnsdall Refining Co., Tulsa.
C. L. Swim, Skelly Oil Co., Tulsa.
H. L. Sullivan, Pulaski Oil Co., Tulsa.
G. M. Sullivan, Liquified Petroleum Co., Tulsa
A. C. Taylor, Central Texas Petroleum Co., Fort Worth.
F. N. Taylor, Tiger Mountain Oil Co., Henrietta, Okla.
Roy W. Terry, Oil State Gasoline Co., Tulsa.
R. W. Thomas, Baltic Gasoline Co., Ranger, Tex.
J. J. Thomas, Skelly Oil Co., Tulsa.
F. S. Thompson, Constant Refining Co., Tulsa.
F. I. Thompson, Westcott-Greis, Tulsa.
E. E. Thompson, Okla. Gasoline Plants, Inc., Oklahoma City.
W. L. Tinsley, Tidal Refining Co., Douglas, Kan.
H. A. Trower, Phillips Petroleum Co., Bartlesville.
Grady Triplett, Refiner & Natural Gasoline Mnfr. Houston.
E. H. Triphouse, Taylor Instrument Co., Tulsa.
E. E. Traywick, Phillips Petroleum Co., Stroud, Okla.
R. D. Turner, Skelly Oil Co., Tulsa.
J. W. Vaiden, Skelly Oil Co., Cooper, Okla.
C. Vorhis, Barnsdall Oil Co., Tulsa.
J. E. Walker, Continental Supply Co., Tulsa.
Wm. Ward, Ward Chemical Co., Tulsa.
H. L. Walder, Eagle Picher Lead Co., Henrietta, Okla.
G. B. Watson, Oil Producer, Tulsa.
W. K. Warren, Warren Petroleum Co., Tulsa.
J. G. Warman, Sand Spring Home & Oil, Sand Springs, Okla.
Lavan Warren, Tiger Mountain Oil Co., Okmulgee, Okla.
S. E. Wallen, Five Civilized Tribes, Muskogee, Okla.
W. G. Watkins, Skelly Oil Co., Wynona, Okla.
M. F. Waters, Smith Separators Co., Tulsa.
R. D. Webb, Carbide & Carbon Chemical Corp., Tulsa.
W. M. Welch, Tulsa.
F. H. Whaley, Metropolitan Refining Co., New York.
R. W. White, Carbide & Carbon Chemical Co., New York.
R. O. Wikoff, Highway Oil Refining Corp., Tulsa.
D. B. Williams, Carbide & Carbon Chemical Co., Tulsa.
T. K. Willett, Phillips Petroleum Co., Shidler, Okla.
Ira Windham, Waite Phillips, Winfield, Kan.
B. H. Wilson, Fort Worth Laboratories, Fort Worth.
Neil Williams, Oil & Gas Journal, Tulsa.
H. S. Wilson, Skelly Oil Co., Lyman, Okla.
C. A. Willis, Empire Refineries, Inc., Tulsa.
B. A. Whitney, Transcontinental Oil Co., Tulsa.
J. W. Wilson, Empire Refineries, Inc., Bartlesville.
O. M. Wickizer, Skelly Oil Co., Tulsa.
E. G. Woolfall, Oklahoma Eastern Oil Co., Tulsa.
A. F. Wood, Chestnut & Smith Corp., Tulsa.
W. Woobank, Tulsa.
O. R. Wohlauf, Magneto Ignition Corp., Tulsa.
C. S. Worley, Engineering, Tulsa.
Paul Wright, Lone Star Gas Co., Gordon, Tex.
R. S. Wyrick, Waite Phillips Co., Beggs, Okla.
M. P. Youker, Waite Phillips Co., Tulsa.
L. A. Yoder, Western Supply Co., Tulsa.
Harrison Young, Sand Springs Home, Sand Springs, Okla.
F. G. Yonkers, Chestnut & Smith Corp., Ranger, Tex.
I. L. Yetman, Tidal Refining Co., Glenpool, Okla.
C. W. Zimmerman, Tidal Refining Co., Tulsa.
J. S. Zink, Oklahoma Natural Gas Co., Tulsa.

Luman Tells of Methods Used in Study of Cuttings from Wells

By H. B. Goodrich
Geologist and Petroleum Engineer

TULSA, April 25

LUDICROUS examples of attempts to correlate productive oil horizons over distances have occurred in the past. Even over short distances mistakes have been made, not only by laymen, but to the chagrin of the geologist, even with the most careful study there has crept in some doubt at times. This has been because there still remained elements of stratigraphic problems which were not determined with certainty by available subsurface data from drilled wells. Therefore any new method or technique that may, by reducing human error, take these problems out of the realm of conjecture, is heartily welcomed by the petroleum geologist, because thereby his efficiency and value to the industry may be increased.

As stated by W. B. Wilson, president of the Tulsa Geological Society, at its meeting April 18, the geologist has had to depend for his knowledge of underground conditions on well logs. Briefly he traced the progress from the time when no well records were kept, except inaccurately the depth to any sand; through more accurate logging of drilled holes, until now a step that has become of intense interest to several oil producing organizations. About the first to take the step was the Atlantic Oil Producing Co., which introduced a department for microscopic study of well samples. E. D. Luman of that company, who has spent much time in this promising study and line of work of which so little has been heard, was introduced and gave an interesting discourse on microscopic investigation as applied to stratigraphy and correlation in the Mid-Continent fields. Mr. Luman spoke in substance as follows:

The study of well cuttings by the microscopic method is rapidly gaining the attention of the entire oil fraternity and as new methods are devised the scope of this branch of oil field geology will be enlarged until it can cover and solve many of the problems of subsurface stratigraphy that cannot be solved by the graphic log system. Like all new sciences, the microscopic study of well sample is far from being perfected. Only after years of work by those engaged in this study will there be a general concordance with regard to the ages and correlations of all of the subsurface stratigraphy over a wide area will result.

There are many variations in methods used by different individual operators. The following methods are used in working on the usual samples such as might be obtained from wells in the Osage, the Holdenville area or southern Oklahoma. It becomes essential at times to devise a new method of treating some particular sample of well cuttings.

Equipment for Work

The laboratory equipment for the determination and identification of well cuttings may include a laboratory desk with its convenient drawers and pigeonholes for the purpose of storing apparatus. Perhaps the most important piece of equipment is the microscope of either the binocular or compound type. While this is a matter of preference the binocular is easier on the eyes. This can be equipped with various eyepieces and objectives to give a wide range in diameters of magnification. Glass slides, Canada balsam, emery powder or stones of some sort for grinding thin sections, slides for mounting specimens of the minute fossil forms, files for the completed slides, tweezers, some means of heat, either a gas stove, bunsen burners or an electric hot plate. Small pans for use in washing samples, tables or shelves for drying samples after washing and some means of filing the washed samples are needed. Reagents, including acids, silver nitrate and potassium chromate, distilled water, test tubes, wash bottles etc., will be needed to make the chemical tests. A set of screens or sieves for use in separating the washing samples and the testing of sands are essential parts of the equipment.

The collecting of samples at the well is perhaps one of the most important things to be considered and it is probably the least considered by the average operator or driller. The time to collect the samples is when the well is drilled. Otherwise the opportunity to obtain samples from the test is gone forever unless slush pit samples are collected afterward in the hope that some information as to the last formation penetrated may be obtained. Companies that lay stress upon sample determination usually have several formation men whose sole duties are to collect samples from important drilling wells. Any company can educate its production department up to the point where the matter of samples is left to the drillers and the production superintendent and with a little co-operation upon the part of both the production and the geological departments, the sampling of a company test is a fairly easy matter.

Taking the Samples

The samples are taken from a bucket or can into which part of the contents of the bailer have been dumped. As a container a cloth sack is preferable to a paper sack since wet samples will cause the paper to become unglued and thus lose part or all of the sample. The depth, name of lease, well number, location, and data of sample should be written on the tag attached to the samples and then the bag should be hung up in such a manner that the muddy water will not run down and obliterate the depths, etc.

Samples should be taken at frequent intervals, every screw if possible. The policy of taking samples only at every change of formation is a bad practice especially when dealing with the Pennsylvanian strata, for in a bed of shale that may appear to the driller the same in its entire thickness, there may be a five-foot horizon which is distinctive enough to permit accurate correlation. A sample from the top or base of the thick shale member might not include this distinctive horizon. In ordinary drilling a screw is five feet and samples should be taken that often on all wildcats and other tests at important horizon markers. A few samples taken at regular intervals of five feet are much better than an equal number spread over several hundred feet for correlation purposes. Casing points are important in that all chances of caving from above the casing point are excluded. The condition of the hole, whether dry or full of water, and the condition of the tools will often change the appearance of a sample so that the physical characteristics are hard to observe. A hole full of water, a hard limestone and small tools result in samples that are little more than rock flour.

Wash at Laboratory

When the samples from the field arrive in the laboratory they require washing even if they have been carefully washed at the well. They are then placed on tables or trays to dry. In case the samples must be examined at once they may be dried out by artificial heat. They are then filed in paper envelopes with the depth, name, number, location on the covers, which are filed away in drawers. A card index system is kept showing the drawers containing samples from each well.

The character of the sample and the formation from which it came largely determine the method used in studying the sample from a microscopic standpoint. Some formations are so characteristic that nothing more than the physical characterics are needed to identfy it. Such samples are described from a physical standpoint as to color, hardness or softness, fracture, cleavage, associated minerals such as mica, glauconite, etc., character, whether dense, sandy,

calcareous, dolomitic, gypsiferous, etc. In the case of sand, the size, shape and surface appearance of the sand grains is described, the character and kind of cementation and the appearance of the sample, that is, whether the sand drills up into individual grains or into aggregates of sand grains. Limes are described as to color, hardness, fracture, texture, etc.

Making Thin Sections

Thin sections are made generally in the case of limes or sands although some of the harder shales can be thin-sectioned. Most of the material can be ground on a wet stone or wet emery but some limes and shales disintegrate when moistened and ground and these must be ground on a dry stone.

In making thin sections a thin flat piece is selected which appears to be a representative piece of the sample and is ground on one side to a perfectly flat surface. This flat surface is then polished by grinding on a very fine stone. The fragment is then cemented to a glass slide with the flat side of the fragment facing the slide, by the use of Canadian balsam. This is heated gently to give the balsam the required hardness and then, after cooling, the slide is placed on the stone and the fragment is ground until required transparency is obtained. A cover glass or a coating of balsam is placed over the fragment to protect it from dust, etc. The slide fully labelled is placed on the microscope for indentification.

The thin section shows the crystallization, texture, cross section of the fossil forms and included minerals. Some formations have such characteristic texture or crystallization that a thin section immediately identifies them. The slides after identification are labelled with the formation name of which they are representative and filed away in slide boxes. They are also indexed much as are the well cuttings.

Chemical tests are made for lime, dolomite and salt water in cores. Many of the sands, shales, etc., show a lime effervescence when treated with hydrochloric acid. The simplest test for dolomite is that dolomite effervesces slowly in cold hydrochloric acid while lime reacts rapidly. Another method is by using silver nitrate and potassium chlorate, when, after treating, washing, and drying, the lime will be strained red while the dolomite will not be affected Salt water can be detected after immersion in distilled water by adding silver nitrate. If there is salt present a white precipitate of silver chloride results. Small quantities of oil are detected by treating the sand or lime with ether or chloroform, or shales with carbon tetrachloride.

Look for Fossils

Samples are searched for fossils sometimes too small to be seen with the naked eye. The abundance of forms is variable some samples being very fossiliferous. New forms as found are mounted on a slide and duly indexed and recorded. If the form cannot be recognized, it is either given a name or number, for reference in the event that it is found in other samples. The indexing is made to refer first to the class, such as ostracods, and second as to the formation in which they occur.

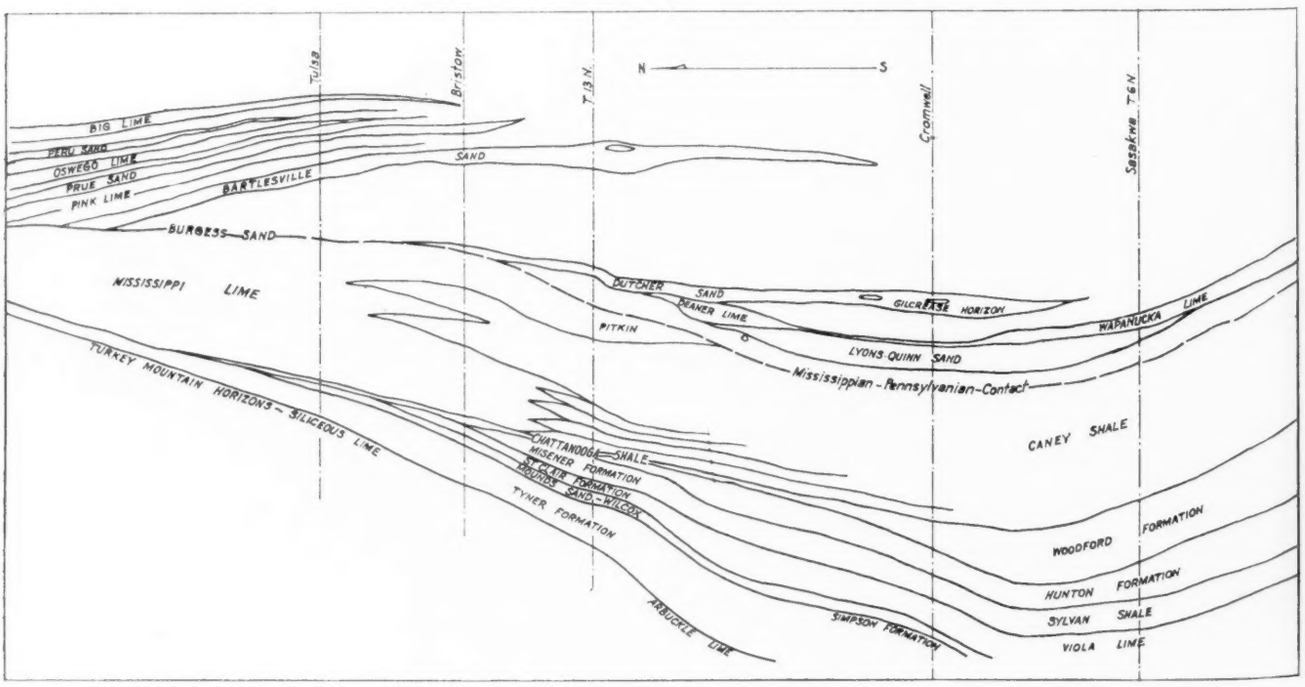
After the samples are worked up and described a graphic log is made up using the driller's log as a guide for limits of formation as being more accurate as to depths. Known horizons are then marked on both logs.

The accuracy of the correlation depends on first knowing the section with which one is dealing. Several sands encountered appear very much alike but generally they are separated by large intervals so that the depths and location of the well will help identification. The same is true of certain fossil forms, which may occur in different horizons separated, but with depth and location the horizon is determined. A better correlation can be made when one has 10 samples covering a 100-foot interval than if the interval is covered by one sample. In very few cases can a definite correlation be made on the basis of only a sample of grey sandy shale, although with the casing point known some fossil forms may afford a good basis. Thickening or thinning of the section and appearance of new beds make correlation difficult.

In one section of the Holdenville area many of the tests drilled have been estimated with regard to sand depths long before the sand was encountered and the estimated depth and the depth later measured varied from 4 to 25 feet. This was possible by the picking up of a good marker and obtaining good samples at its depth.

Besides the use of samples for correlation the study will determine the nature, kind, porosity, etc., of a producing horizon. This is very valuable information in many case particularly in wells requiring shooting. The study of samples also gives data on sedimentation, land masses and paleogeography, of great interest to the scientist.

As a partial demonstration of the results of his work the speaker showed a



Generalized North-South Cross Section from near Ada to Osage county, Okla., by E. D. Luman, geologist for the Atlantic Oil Producing Co.

cross section from the Osage south to near Ada. The various horizons were described as follows, while their extension underground and correlation with other formations were seen on the section.

The Big Lime, the first marker, a solid and broken light gray to drab colored lime. Under this the Peru sand, grey shaley at top and micaceous. The Oswego lime, same as the Big Lime, though sometimes sandy and carrying oil at times. The Prue Sand is laminated and shaley at the top. It is also micaceous. The Pink Lime, from 5 to 10 feet thick, is a brown hard limestone. The Bartlesville Sand or Salt sand, is as much as 250 feet thick locally. The top is laminated, while the base is a good sand, the size of the grains increasing.

The Ducher sand is not present near Tulsa. It is very spotty and differs in the townships in which it occurs. At one point the Ducher is right on top of the Deaner, although further south there are thirty feet of shale between the two. The next marker, the Deaner Lime, has caused considerable past difficulty of correlation. From about T. 13N southward it thins out into shale and is correlated with the Wapanucka. Under this is the Lyons-Quin sand which is lost near Ada. Below this is shale for 25 to 150 feet and the Caney shale of Mississippian age at the south which lenses out toward the north as to the Mississippian, in Creek and Tulsa counties it is a grey limestone eroded at the top. In the Osage it is a hard cherty lime. Going south from the Osage the lime changes and near Cromwell it has disappeared and the Caney shale replaces. Below the Mississippi is the Chattanooga shale, a black brown pyritiferous shale which is not defined in the Woodford formation near Ada. Below this horizon south of T. 13 N. comes in a limestone 15 to 100 feet thick. In Cromwell it is a light gray crystalline limestone. It drills up like flour. Below that in the Bristow district is 60 feet of shale; the Misener formation which produces oil in T. 15-10, but not much. The Misener is continuous through the Bristow district but increases to the south to 150 feet.

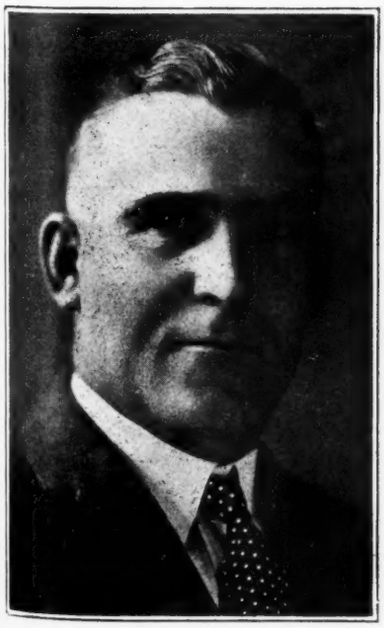
Below this in Bristow is a white limestone, fossiliferous at the top, changing to black. The base of the Silurian is placed at this point which is correlated with the upper part of the Viola and the St. Clair. Under this is the Mounds or Wilcox sand, from 0 to 150 feet thick, which possibly belongs in the Simpson. Then follows the Tyner formation 200 feet thick. The upper 100 feet is blue shale with dark red streak; the lower half is sand with dark green shales and lime shells. This is the Hominy series, below which is the Turkey Mountain. A widespread nomenclature covers this although no two horizons are the same. There is very little sand. There is an erosion of dolomitic lime and the so-called sands are generally lime or chert.

Following Mr. Luman's paper questions were propounded and discussions of the mooted points in the proposed correlations, by Messrs. Greene, Beakley, Matson, Bloesch, Snow and others.

Mrs. Edson, of the Roxana company, who is engaged in the same line of microscopic investigation, in an impromptu response, described the methods used as very similar to those of the Atlantic Oil Producing Co. As did the other speaker, she mentioned that in cases of being rushed for results of determinations no time was wasted in identifying samples further than by certain type characteristics.

In further questions whether certain horizons could be identified as the same if coming from two or more widely separated wells another official of the Atlantic stated that having been constantly in touch with the microscopic work there were indeed unmistakable characteristics of certain horizons, for instance the Lyons-Quinn was self identifying everywhere.

The most impressive deduction from the discussion is that any organization equipping itself thoroughly with a department of skilled scientists in a laboratory may properly construct an underground map which will eliminate many of the hazards of wildcatting and put oil production on a more accurate, business-like, engineering basis.



Emery A. Cook
Elected First Vice-President
Tulsa Purchasing Agent's Association

Purchasing Agents Name Officers for 1925

Staff Special

TULSA, April 25.—At the annual election of officers of the Tulsa Purchasing Agents association recently, Fred W. Robertson, purchaser for Skelly Oil Co. was named president for the ensuing year. Mr. Robertson, who served last year as vice-president, has been an ardent worker for the success of the association since it was organized six years ago. He succeeds as president A. L. Forquer, purchaser for the Amerada Petroleum Corp., who now becomes a member of the executive committee.

Emery A. Cook, purchaser for the Twin State-Sun Oil companies, was elected first vice-president. Mr. Cook also is the only candidate from district No. 2 of the national association for national vice-president and probably will be elected to that office at the national convention to be held in Milwaukee in May.

A. J. Edwards, purchaser for the Oklahoma Power Co., was elected second vice-president. O. V. Borden was elected secretary for the sixth consecutive time. Except for a brief period when he was in other work, Mr. Borden has served the association continuously since its organization, and has always been one of the leading spirits in its upbuilding. In the choosing of national directors, V. C. Fuller, purchaser for the Gypsy Oil Co., was named to succeed J. W. Shields, of the Pure Oil Co. Mr. Fuller was president of the Tulsa association for one term, having been succeeded by A. L. Forquer. George C. Pohler, of Cosden & Co., is the other national director.

A step new in the history of the association was taken when Roy D. Gwynne, formerly purchaser for the Gypsy Oil Co., was named president emeritus as an expression of appreciation of his efforts toward the organization and development of the association. Mr. Gwynne, who is slowly recovering from a long siege of ill health, is at present up in the Ozarks, at Noel, Mo.

Fred W. Robertson
Elected President of
Tulsa Purchasing Agent's Association

MARION, VA.—Virginia Oil Co., Inc., has just completed a modern service station on one of Marion's busiest corners, according to Frank T. Lemmon, president.

HERE AND THERE

L. A. Warren, manager of the Eason Oil Co., Enid, Okla., is putting forth strenuous efforts to build up a marketing division for his company, which now has in operation 14 tank stations. Additions to these stations are continually being made, C. M. Kinney, secretary of the Oklahoma Oil Jobbers Assoc., Oklahoma City, Okla., reports.

* * *

Oscar H. Minder, president and general manager of the Inter-State Oil Co., Minneapolis, tore himself loose from business at home, and with his wife, attended the N. P. M. A. convention at Chicago, which he said was both instructive and enjoyable, according to R. S. Jackson, proprietor of R. S. Jackson & Co., Chicago.

* * *

J. W. Gehrken, formerly agent at Monroe, Mich. for the Standard Oil Co. of Indiana, has resigned to become manager for the Monroe Co-Operative Oil Co. at Monroe. Willis C. McElroy, formerly chief clerk for the Standard at Monroe, succeeded Mr. Gehrken as agent at Monroe.

* * *

E. A. Gibson, president of the Gibson Oil Co., Ft. Smith, Ark., attended the N. P. M. A. convention at Chicago recently and spent a day at St. Louis looking after business interests according to W. Q. Leavitt, with the Gibson company.

* * *

A. R. Riggen, of the Home Oil Co., Milan, Mo., is home from the hospital at Kirksville, Mo. where he underwent an operation a few weeks ago. He is getting along nicely, reports N. A. Mewmaw, of the Home Company.

* * *

Harry L. Buckles, salesmanager and vice president of Robison Service Corp., Fort Morgan, Colo., is moving his family from Omaha, Neb. to that point, reports Harry I. Robison, president.

* * *

C. C. Stoll, president, Stoll Oil Refining Co., Louisville, Ky., and Mrs. Stoll have returned from California where they spent the winter.

* * *

H. A. Rheiner, manager of the Jamestown, N. Y. division of the Pennzoil Co., has just returned from a short trip to Toledo and Cleveland, O.

* * *

Mrs. Minyon Cunningham, Dallas, Tex., recently made a trip to Fowler, Colo. to look after her oil interests.

* * *

Oliver Adcock, oil man of Rocky Ford, Colo., recently spent a few days at Pueblo, Colo. on business.

J. J. Harvey recently resigned as vice president and general manager of the Invincible Petroleum Corp. to become export sales manager of Swan-Finch Oil Corp., at New York.

* * *

L. A. Warren
Manager Eason Oil Co., Enid, Okla.

A. B. Dobbs, salesmanager for the Indian Refining Co. at Detroit, Mich., has had an additional responsibility put on him when he recently became the father of a prospective oil man, as I. B. Dworman of the Indian's Detroit offices, puts it.

Mr. Dworman say that the Havoline department at Detroit is breaking all records, even on babies, as Lou Wettfelt and L. Cahn, salesmen, also handed out free cigars recently.

* * *

An eight-pound son recently arrived at the home of R. C. Ragle, who is with the Dearborn Oil Co., Dearborn, Mich. Mr. Ragle says that the boy looks like an oil man, according to J. M. Ragle, also of the Dearborn company.

* * *

H. Casting, vice president and salesmanager for Iowa of the Penn Oil & Supply Co., St. Joseph, Mo., visited the home office recently for a day, reports O. Salisbury, president.

* * *

A baby boy was born on Feb 28 to Mr. and Mrs. Victor Mandoff. Mr. Mandoff is district manager at Worcester, Mass. for Colonial Filling Stations, Inc.

W. B. McBee, manager of the Lawton Refining Co., Lawton, Okla., was a recent visitor at the offices of C. M. Kinney, secretary of the Oklahoma Oil Jobbers Assoc., at Oklahoma City. Mr. McBee formerly a member of the Oklahoma legislature, was the one who called a special meeting of the legislature to bring impeachment proceedings against ex-governor Jack Walton. Aside from being a good oil man, Mr. McBee is a good lawyer, Mr. Kinney says.

* * *

Samuel J. Caplan resigned on April 2 as superintendent of Baum's Castorine Co., Rome, N. Y., and is now secretary and superintendent of the Apex Distributing Co., Pittsburgh, Pa., manufacturers of soap powders, liquid soap, etc.

Ansell Carrier, formerly in charge of the grease making department of Baum's Castorine Co., is now in charge of the entire plant.

* * *

Wesley I. Nunn, manager of the market division of the Marland Refining Co., Ponca City, Okla., was recently confined to his home for a few weeks with a severe attack of "flu." He has recovered sufficiently to go to Excelsior, Mo., to take advantage of the baths at this resort.

* * *

L. A. Hinds, of the refining sales department of the White Eagle Oil & Refining Co., Kansas City, Mo., has just returned from a tour through Iowa and Nebraska, where he visited many jobbers handling White Eagle products.

* * *

Elmer E. Harris, secretary and treasurer of Elmer E. Harris & Co., Buffalo, N. Y., who has been seriously ill this winter, is considerably improved and able to be out again, according to W. G. Weimert, general manager.

* * *

Roy Williams has joined the White Eagle Oil & Refining Co., at Kansas City, Mo., as special representative of the lubricating department, according to L. A. Hinds, of the refining sales department.

* * *

H. F. Tuttle, formerly with the Vacuum Oil Co., was recently appointed manager of the newly-opened Kansas City, Mo., office and warehouse of the Independent Lubricating Co., Inc., Topeka, Kan., from which the distribution in Missouri will be handled.

* * *

R. L. Dunkle has resigned as vice president of the Waite Phillips Co., Tulsa. His future plans are not known.

Salvage of Used Material Profitable; but First Buy A Welding Outfit

By A. F. Hinton
N. P. N. STAFF WRITER

BARNSDALL, OKLA., April 24 INGENUITY and initiative added to a good welding outfit, and coupled with a determination to save money for the company at every opportunity are the principal factors in the reclamation of used material, a department activity nowadays receiving increasing attention on the part of producing companies.

Through a system of keeping a record of material on leases not in use, getting this material into a central shop or warehouse, repairing it and making it again serviceable, or cutting it up and forming it into other useful and money-saving articles, the junk pile is diminished in size, buying of otherwise unnecessary new material is reduced, and a portion of the lifting cost is removed from every barrel of oil produced. Especially do such practices help out in the operation of small-production properties, where only a small expense disturbes the delicate balance between profit and loss in operation.

Work of this character has been rendered almost mandatory in many cases during the past few years of low crude prices and high operating expense and its development has been the means of postponing the abandonment of many small-production leases. Thus the salvaging of used material is strictly a conservation measure, in that it tends to enable the producer to continue operations where otherwise he would be forced to abandon his unprofitable properties, diminishing by just so much the visible supply of crude oil.

A Profit-Producing Company

Barnsdall Oil Co., whose Oklahoma operations have for many years been centered in the Osage district, has developed a very efficient system of reclamation and is benefitting substantially thereby. This company is engaged primarily in producing profit, rather than in simply producing oil, according to R. F. MacArthur, general manager. All of the producing department's activities are based upon this slogan, displayed prominently through company properties in the general manager's own handwriting:—"The maximum production from each well each day at the minimum cost."

Superintendents in charge of the various districts in the Barnsdall zone of operations send in each month to the general office in Tulsa a statement of unused material in their districts. These reports are combined into a general list which is sent out to each of the superintendents and to others interested, such as the general superintendent, material department, warehouse department, shop, etc. This list shows material not in use on each lease, and also shows the material listed by articles.

Scene at shops of Barnsdall Oil Co., Barnsdall, Okla., showing welder at work making pulling masts of junk casing. This picture shows the base of the mast, the weld where the 8-inch and 6-inch casing are joined, and the manner of attaching the ladder pieces. Machine shop in background. N. P. N. Staff Photo

Material shown on this list, is classified through use of numbers, so that its condition and serviceability is known. New material is given No. 1, material used but serviceable carries No. 2, while material needing overhauling, or to be classified as junk is shown by No. 3 Through the use of this list, a district superintendent in need of a certain article may find that he can get it from a neighboring district by simply sending a truck over for it, while the general office is able to gather material from all over the system when the need arises.

This unused material is constantly being picked up by trucks, which are thus enabled to carry a load both ways, and moves toward the central warehouse at Barndall, where it is placed in stock if classifying No. 1 or No. 2 and goes to the shop, also at Barnsdall, if coming under No. 3 classification. At the shop, it is either made over and repaired, broken up and used for other purposes, or is finally junked. The warehouse issues a monthly inventory statement showing material of all kinds on hand, material sent out and received. The shop also issues an inventory about once a month, giving a list of articles on hand which have been repaired and made ready for service and which have not yet been transferred to warehouse account.

A Use For Everything

Material comes to the shop in every stage of repair or lack of it and in great variety; practically everything used in an oil field finds its way there sooner or later. The shop superintendent, R. J. Bevington, decides whether material brought in is in such shape that it can be repaired and used again, and in the event that it cannot, it is up to him to get as many useful articles out of it as possible. In many cases, it seems, he uses everything but the rust in fashioning new articles out of old and otherwise useless junk material. He has 25 men working in the shop.

Used casing coming into the shop for final disposition is carefully inspected, and if found defective is not again used for drilling purposes. If no defects rendering it unfit for drilling are noted, it is rethreaded, weighed, cleaned up and passed along to the warehouse as serviceable second-hand pipe. That which is thrown aside as unfit for drilling is made to serve a number of useful purposes.

At present, the company is making use of a great deal of otherwise useless 6⅝ and 8¼-inch casing in the manufacture of pulling masts, which are big money-savers, especially when thus made of what is practically junk material. These masts are placed in position over the wells and remain there, doing away with the necessity of hauling a pulling machine from one location to another at considerable expense, and, in rough country, with considerable difficulty. At present the masts are being placed at wells so located that it is hard to get the pulling machine in, but in time all the company's pumping wells probably will be equipped with them.

The masts are about 30 feet long and are made throughout with a welding outfit and cutting torch. The body of the mast is composed of a joint of 8¼-inch casing, into which is welded a length of 6⅝-inch, the larger pipe forming the lower portion of the mast. The base

is composed of a piece of 8-inch or 10-inch pipe about eight feet long, welded to base of mast and at right angles to it. A brace made of two-inch pipe is welded to the base and to the side of mast.

Short pieces of old sucker rods are used to form a ladder on the mast, placed 18 inches apart and staggered. A hole is burned in side of mast and the piece of sucker rod is welded into it. The rod is cut long enough to reach through to the other side of the mast column. At top of the mast the torch is used to cut a groove for the crown pulley and another shorter one at right angles to it for the pulley shaft. The pulley is usually a sheave from a tubing block. Dead-line stirrups are made from old polish rods or surface rods, and are bolted to top of mast about 18 inches below the pulley. The mast simply stands over the well, being held in place by four guy-wires.

Top of Barnsdall Oil Co. pulling masts made of old casing. This picture shows the dead-line stirrups and groove in end for crown pulley. N. P. N. Staff Photo

Many Uses for Small Pipe

This is just a sample of what can be done with old pipe and a welding outfit. Smaller pipe presents even greater opportunities for uses other than those for which it was intended. Line pipe coming into the shop such as 2-inch to 4-inch oil, water, and gas lines, is inspected and tested up to 1000 pounds water pressure, after which it is classified and assigned for use in the field according to its condition. It may be no good for high pressure use, but may still be perfectly satisfactory for a gravity line, for instance, and is so classified and inventoried. It is welded, if split or broken, rethreaded if necessary, and generally placed in as good condition as possible.

Two-inch pipe that apparently is no good at all for ordinary field work is cut up and used in many ways. For instance, the company builds all its towers, using welded two-inch pipe for the framework of the building. Engine houses are similarly built. This old pipe also is used for rod-line stakes, fence posts, and other things. In building the power houses, galvanized corrugated iron is wired on to the welded frame, both for siding and roof, and the window frames are nailed to this sheeting. Doors are framed of pipe and hung to side posts with a simple hook, all made by welding. The pipe fence posts are used to fence off b.s. ponds to keep cattle out of them, and are also often used to enclose a battery of lease tanks.

When a boiler from the field comes into the shop, it is seized upon with all the enthusiasm of medical students in the dissecting room, and, if it proves not susceptible of being repaired and placed back in service, it returns to the field in fragments, for work totally unrelated to that for which they were originally built.

Boilers Transformed

Little is left of the boiler when these enthusiasts have finished with it, and very little of it finds a final resting place on the junk pile. The steam dome, for instance, is cut off, turned upside down and four short pipe legs are welded on the bottom—or on what was the top originally—and there appears a serviceable and sturdy water barrel for drilling wells. It makes a tight barrel that will stand much hard use and rough treatment and which will never develop a leak through parting of the staves. It will hold about 60 to 65 gallons.

Another use for the dome is to convert it into a forge for a drilling well, and it makes an excellent and serviceable one. The torch is used to cut a piece out of the side and to make a hole for the entry of the burner. The bricks are placed inside as in any other forge, a sheet-iron lid is provided to cover the opening, the gas and steam lines are hooked onto the burner and then it is up to the toolie.

Fire-boxes from the dissected boilers are used for mufflers on gas engines, and have proven very satisfactory for this purpose. The shell is furnished with a welded top and bottom and becomes a scrubber tank at a gasoline plant, or is used for lease storage of gasoline and lubricating oil for motor-driven equipment. Finally, the tubes are used for fence-posts, thus coming into competition with the 2-inch pipe.

After all this has been done, there may be a few stray pieces of the boiler left, but they are not all junk, even yet. In company with all other junk material that is suitable for the purpose, this old boiler plate is punched out into washers, running from ½ inch to 1¼ inches in size, and is ideal for such use. The washers are added to the warehouse stock and are used plentifully in the field, especially in rig-building.

Tanks Saved and Rebuilt

Another interesting job of salvaging old material in the Barnsdall shop is that of making over lease stock tanks which have become leaky and unserviceable through defective sheets, corrosion, or other causes. These tanks are brought into the shop, where the bad sheets are cut out, a new bottom put in and a practically new tank made up. Thus, instead of discarding the old 250-barrel tank and buying a new one, the company has a good 70 to 100-barrel tank, all rebuilt and serviceable, without having bought anything except the new bottom and the gaskets used in the seams. The bottoms are made of No. 8 gauge steel. Bolts from the old tank are taken out, cleaned up, and re-used. Those that are left over are saved for the next job, if needed.

These tanks, which are used in small production properties, give reasonably tight storage and are of convenient size. They are eight feet high and nine feet in diameter. Oil enters the tank through a 3-inch line in the center of the roof, this line extending to near the bottom, so that the discharge end is always immersed in oil. The opening through which this line passes is fitted with two 3-inch flanges. Other openings in the tank include an 8-inch opening with hinged cover, near edge of tank, for gauging and cleaning out, a 2-inch flange 12 inches from bottom for oil outlet, another 2-inch flange just at bottom of shell for water draw-off, and a 4-inch flange and plug in the bottom near the shell for cleaning.

In another article the writer will tell of additional instances of economical operation at the Barnsdall shop, including more details as to the manner in which casing is handled.

ANY PRODUCT

from gasoline and natural gasoline to petroleum coke will be found in the Refinery Products Directory on pages 50-51. Use that as your buyers' guide when you don't know where to buy a certain product and can't find it in the regular advertising. Tell them where you found their name.

Minnesota Jobbers Study Gasoline Tax at Annual Meeting

MINNEAPOLIS, April 24

MINNESOTA'S annual meeting of oil jobbers resulted last Thursday in the re-election of all of the former officers. The officers of the Minnesota Petroleum Assocation are as follows:

J. M. Wolf, Southern Minnesota Oil Co., Fairmont, is president; R. A. Gulbranson, Cities Service Oil Co., St. Paul, first vice-president; William A. Syreen, Syreen Brothers Oil Co., Ironton, second vice-president; J. R. Leach, Bartles-Minnesota Oil Co., Stillwater, treasurer. Paul E. Hadlick of Minneapolis continues as secretary.

The Minnesota organization's plan of electing officers is unique among all the state associations. The membership at annual election is permitted to vote for directors only. Four directors are chosen each year for a term of three years. But following each annual election, the directors select the officers of the association from among themselves.

In the election, four directors were named as usual. Some of them succeeded themselves. They are J. A. Ferry, Jefferson Oil Co., Albert Lea, Minn.; H. W. Footh, Mankato Oil Co., Mankato; E. L. Lyman, Rochester Oil Co., Rochester, and Mr. Syreen of Ironton who is second vice-president himself both as an officer and a member of the board.

The Moorish room of the West Hotel is a large assembly hall. The back end of it was occupied by the equipment exhibit in this instance so the exhibition was in the same room with the oil men's meetings. Exhibits were all up and exhibitors ready to show their wares when registration was over Tuesday morning, April 27. Registration was nearly 200. The membership of the Minnesota association has grown rapidly over the last two years.

President Wolf's annual address might have been set down in three pages of typewritten material. He urged the association members to keep up their regional meetings; advised them to post the service station price of gasoline at their stations showing the tax as a separate item, and spoke hopefully of the coming year's work.

The secretary's report was short also. In fact, Mr. Hadlick reminded the oil men that they had been getting reports from him every few days all year and explained that there was no use for him to make a formal report now. The treasurer's report was shortest of all. Mr. Leach said, "All of our bills are paid and we have cash in bank to the amount of $1,200." After that two committees were appointed and the first half-day's work was done.

Although the meeting was never dead for a moment, Mr. Hadlick had taken one extra precaution to prevent the discussion from "running out of material." He inaugurated the question box feature which worked well. Several good questions which led to interesting discussions came out of the box.

W. A. McMillan, Lindsay-McMillan Oil Co., Milwaukee, delivered an address on "Selling your Own Brand of Lubricating Oil." In it Mr. McMillan urged the oil men to know lubrication

J. M. Wolf, re-elected president Minnesota Petroleum Association

and be able to recommend it intelligently before they undertook the responsibilities of putting a new product on the market. "The oil man must know the truth about what he is selling, must be able to persuade his salesmen and keep them enthusiastic, and be always in a position to reward the public's confidence with good merchandise."

In the course of his talk, Mr. McMillan touched upon the work of the standardization committee of the National Petroleum Marketers Association, and he took this occasion to urge the Minnesota oil men to take part in this movement to hasten the time when Independent Oil men might have uniform specifications all over the country.

Discussion of the recently enacted 2-cent gasoline tax in Minnesota occupied much of the time of the convention. The oil men were anxious to know the exact provisions of the new law which goes into effect May, 1, 1925. Furthermore they wanted to know just what is expected of the Minnesota oil jobbers incidental to the administration of the law. Most of the members were able to get this information before leaving Minneapolis for it was discussed from all sides. Mr. Hadlick had drafts of the law for distribution among the members, and furthermore he had briefed and simplified the legal wording. Mr. Hadlick is an attorney.

The state tax is 2 cents per gallon on every gallon sold, and it becomes effective May 1. Tax must be paid on all gasoline in storage May 1 and all received subsequently. Three per cent is allowed for evaporation. Tax is exempt on gasoline for a great many uses, but that matter is handled by rebate from the state to the consumer and does not concern the oil men. The chief oil inspector is to maintain a registration of all gasoline dealers.

Hjalmer Nilsson, chief oil inspector of Minnesota was on the program of the meeting. He usually is, when the Minnesota jobbers meet. It is claimed for his department that it is the only one in the world which the oil men consider worth what he costs. John Degnan, chief deputy oil inspector delivered a clear discussion of the provisions of the new tax law to augment the information which the association had already dispensed by mail.

L. V. Nicholas, president of the National Petroleum Marketers Association was on the program. He did not deliver a prepared address but answered questions about the advertising campaign of the I. O. M. A. and especially about the new national uniform product of the Independents, "Red Hat Gasoline" which will go into distribution after the Saturday Evening Post advertising campaign on the "Insignia of Independence" has been running a while.

F. H. Enig, head of the collective buying department of the N. P. M. A., accompanied Mr. Nicholas to Minneapolis and so did Sam Hunt, the newly employed advertising manager of the I. O. M. A., who will handle the work incidental to the S. E. P. advertising and help also with working out publicity campaigns for members in their local communities and home town papers. His job is to put over "Red Hat" and make it a national brand.

Mr. Hunt comes from St. Louis and Mr. Nicholas says he is a sales promotion executive of mature experience. His last situation was with the Galena Signal Oil Co., for whom he handled sales promotion in 11 states. Mr. Nicholas says the associations' Chicago offices are being enlarged to make room for the two growing departments of collective buying and advertising.

ATTENTION OIL JOBBERS

Have you forgotten where you bought your last grease, road oil or some other product? Then turn to pages 58-59. The Refinery Products Directory runs every week to tell you where you can get any product you want. Use it and tell them where you saw their name when writing.

Increasing Interest is Shown in Line Pipe Market

By Special Correspondent

PITTSBURGH, April 28

A FEATURE of the tubular products market is the increasing interest in line pipe. Mills largely have worked off their backlogs although the National Tube Co., here and the Youngstown Sheet & Tube Co., Youngstown, O., still have plenty on hand for 60 days at least.

The Standard Oil Co. of New Jersey has placed with its usual source of supply an order for 10,000 tons of 10-inch line pipe for the Mid-Continent fields and the Hope Engineering & Supply Co. is about to place an order for 120 miles of 10, 12 and 14-inch line pipe for the Larutan Fuel Co. for a line connecting Wichita, Kans., and Blackwell, Okla., fields. Miscellaneous orders continue to come in from time to time from the oil country goods distributors, usually in lots of one to five carloads at a time, although the larger jobbers order five, eight or ten carloads at a time, and some of that size have been received by each of several larger producers here recently. Pipe mills continue to average 70 or 75 per cent operations.

It now seems probable that pipe makers will accept the oil country tubular goods specifications of the American Petroleum Institute, which provide for heavier wall thickness. This will involve the changing of much pipe mill equipment.

It is reported from Paris that the pipe combine recently organized in Dusseldorf has made an accord with the Cologne group and Czecho-Slovakian tube mills and the combined capacity is 800,000 tons annually. Annual home consumption there is only about 400,000 tons annually, hence they are quoting some low prices in England and in this country. A representative of the American Steel Export Co. recently placed an order with the German Mannesmann mill for 4000 tons of high-carbon seamless steel casing and the same buyer gave the Acieries et Usines a Tubes de la Saare at Bous, Saare, France, a 6000-ton order for similar material. This 10,000 tons of material is all for use in deep drilling in the California petroleum fields.

The new seamless tube mill at Gary, Ind., of the Gary Tube Co., has commenced to operate. It is producing drill pipe and casing from 4 to 12-inches in diameter. The plant at present embraces five buttweld mills, four lapweld mills, and one seamless mill, besides coupling job, machine and blacksmith shops and a galvanizing plant. Under construction are a 14-inch continuous skelp mill, a 16-inch continuous skelp mill and a 42-inch universal plate mill.

Occasional orders for small lots of tank plates are taken similar to those placed by the Pacific Gas & Electric Co., Potrero plant, San Francisco. It ordered two 40,000-barrel and one 35,000,-barrel tanks from the Western Pipe & Steel Co., 390 tons and four floating tank covers from the Chicago Bridge & Iron Works, taking 150 tons. The Associated Oil Co., of San Francisco, ordered 18 20,000-gallon tanks taking 102 tons to be erected at Tacoma, Wash., from the Steel Tank & Pipe Co. and from the same fabricator, the Standard Oil Co., of California, has ordered two 20,000-barrel tanks taking 125 tons.

The Standard Oil Co., of Indiana, however, has ordered 57 stills from the Struthers-Wells Co., Warren, Pa., and this lot will require 2100 tons of plates. Another large plate tonnage is involved in the order for 60 tank cars placed with the General American Tank Car Corp. by the Tidal Oil Co. The Standard Oil Co., of Indiana, is inquiring for eight gondola cars. From 500 to 1000 tons of plates are involved in the tank inquiry from the Humble Oil & Refining Co., Houston, Tex., and the Texon Oil & Land Co., Texon, Tex., wants some small tanks for a southwestern location taking but 100 tons.

The Standard Oil Co., of New Jersey, is putting up a building which will take something like 300 tons of structural shapes.

Shape prices are stronger than plates, the latter holding at 1.90 cents a pound to 2.00 cents while the former are quoted at 2.00 to 2.10 cents.

Production of steel barrels in March as shown by the Department of Commerce by 30 builders was 505,429 which total is much larger than any monthly figure for more than a year. It compares with 413,823 in February this year and with 394,478 in March last year. The largest previous figure was in October 1924, 447,900. Shipments exceeded production since 510,928 barrels were delivered in March this year. Unfilled orders on March 31 totaled 1,264,860 or more than double the figure of a year ago and about three times as large as the figure at the end of last June. The March figure was about 20 per cent under the high mark registered Dec. 31, 1924.

The Skelly Oil Co., Tulsa, has started work on a gasoline plant at Louann, Ark. This will cost $500,000 with machinery.

The Amarillo Refining Co., Amarillo, Tex., has authorized plans for extending its refinery and to increase output from 3000 to 10,000 barrels daily. Improvements will be made in the present unit as well according to Reese S. Allen, president.

The Oriental Oil Co., Oriental Station, Dallas, Tex., will rebuild the part of its oil storage and distributing plant recently destroyed by fire. Loss on building and equipment was approximately $75,000.

Bessemer Gas Engine Co. President Dies

GROVE CITY, PA., April 27.—Funeral services for John Carruthers, president of the Bessemer Gas Engine Co., were held at the Presbyterian church here this afternoon and interment was made in the Woodland cemetery.

Mr. Carruthers had not been active in the affairs of the company, except as to general matters of policy, for about two years. His health had not been good for some time and he had sought medical assistance in Cleveland and in other cities. Recently, he seemed to be much improved in health, but a few days ago took a turn for the worse. Death came early last Friday morning.

Mr. Carruthers was born in Cleveland, Jan. 14, 1855 and received his education in the public schools of that city. He was married in 1880 to Miss Laura Wathey, who survives him. Surviving him also are two sons, Glenn and H. M., three sisters and one brother.

At the beginning of his career in the oil industry, Mr. Carruthers was the foreman of an oil well supply and machine shop at Karns City, Pa. He later owned supply stores and during the time he was engaged in this work, he began to study oil field power. A young physician Dr. E. J. Fithian also was experimenting along the same line and in time the two merged their discoveries and finances. With other associates they located their shops successively in Parkersburg, Lima and Grove City. The business grew and prospered until it became a leader in the manufacture of gas engines and compressors, employing at this time about 1,000 persons.

NEW YORK, April 25.—E. P. Canepa, head of the Argentine Oil Commission, which has charge of the Argentine government oil lands, has been looking over the refineries in this country for the purpose of acquainting himself with the best practices, as the Argentine government expects to put in its own refinery. Mr. Canepa is also acting as the purchasing agent on the equipment required.

I HAVE FORGOTTEN

where I bought that last grease. That's what many jobbers write N. P. N. You will always find where you can buy any petroleum product on pages 58-59. Please mention your source of information when writing these companies.

Garber Deep Drilling Campaign Starts New Tonkawa Pay Below Wilcox

By A. F. Hinton
N. P. N. STAFF WRITER

TULSA, April 25

AS a result of the discovery of the Wilcox sand in the Garber field, Garfield county, in the Sinclair Oil & Gas Co. No. 25 Belveal, 18 wells are being started down for the new sand, and several additional locations have been made, all of which probably will be drilled at once. The general estimate as to the cost of drilling one of these wells down to the 4300-foot level is $75,000, so that the drilling campaign as now outlined calls for the expenditure of about $1,350,000.

These wells will be drilled to 3400 feet with rotary tools, where they will cement the 8-inch pipe and standardize. Contracts are being let for the rotary drilling at $9 a foot, and at $7 a foot for the remainder of the hole drilled with standard tools. Only two strings of casing will be used in the wells, the 8¼-inch down to 3400 feet, and the 6⅝ inch to top of sand.

Cosden Oil & Gas Co. is starting five wells at once on its School Land lease in the SE¼ of 13-22-4W, which it owns jointly with Marland Oil Co.. Four of these wells are located along the south line of the lease, the southeast corner location, No. 41, being a north offset to the discovery. The fifth well is one location north of No. 41, or in the NEc SE SE of 13. Roxana Petroleum Corp. is starting four wells for the deep sand, one of which takes on the aspect of a wildcat, being a half-mile north and the same distance west of the Belveal well. This location is on the Wolf farm, in the SEc NW of 13. The other three Roxana wells are located on the Schroeder farm, in the SW of 18-22-3W.

Sinclair Oil & Gas Co. also will drill five wells at once, and may have to drill two more, if it decides to offset the Roxana well in 13. Healdton Oil & Gas Co. is drilling two wells in the NW NE of 24-22-4W, and the Crews Heirs Oil Co. has started operations on one well in the CWL E½ SW of 19-22-3W. It has been reported that Sinclair would start four wells offsetting this line to the west, but so far only one location has been made. The SE¼ and the east half of the SW¼ were formerly held by the Sinclair Co., but was awarded to the Crews heirs after litigation.

The Sinclair Company also recently lost part of another lease in Garber when the Whitney estate sued for possession of the NE of 18-22-3W, on the grounds of non-development. The east 120 acres of this quarter-section on which no drilling had been done, was awarded to the Whitneys as a result of this suit. It is reported that a deep test will be drilled on this property, and that it will be drilled by Haley Garbey & Pulse, contractors and operators.

Sinclair is giving the south end of the field a Wilcox test, having started up again in its No. 1 Burns, in the C NE SE of 30-22-3W, which is drilling in a 6-inch hole below 3535 feet. This well had been shut down at 3500 feet for about three years. Champlin Refining Co. is reported to be starting a deep test in the NEc SW of 24-22-4W, on the Beggs farm. This location is a half-mile south and the same distance west of the Wilcox sand discovery well.

Although the Wilcox sand is getting most of the attention at Garber at present, the development of the 2300-foot, or Ponca, sand, is also playing an important part in the field's progress. Numbers of wells in the field are being deepened to this formation from the Garber sand horizon at around 2100 feet, and are coming in for from 400 to 600 barrels initial production. Drilling these wells on down is a profitable investment, as in most cases only 200 feet or a little more is necessary to find the new flush production. This crude tests 44.2 gravity. The center of the 2300-foot sand activity is around the west line of 18-22-3W, including the Roxana's Schroeder lease, the Cosden-Marland school land lease and two Sinclair leases. The best well yet drilled into the 2300-foot sand was the Roxana's No. 8 Schroeder in the NWc SW of 18. This well was drilled in 60 days ago with initial production of 850 barrels at eight feet in the sand and is still making better than 600 barrels. At present there are six wells producing from this sand and eight drilling down to it. Two recent wells in this horizon were the Sinclair No. 7 Hartley, in the SEc SW NW of 18 and Cosden-Marland No. 40 School Land, in the NEc SE of 13. The former came in for 480 barrels at six feet in sand topped at 2294 feet, while the latter was good for 360 barrels at 12 feet in sand found at 2319 feet.

Tonkawa Developments

The most interesting development of the past week at Tonkawa was the finding of what is believed to be a new deep pay below the Wilcox, in the Siliceous lime. The well making this find was the Comar Oil Co. No. 14-W Gaume, in the SWc NE SW NE of 2-24-1W. It had the Wilcox from 4011 to 4046 feet, getting the lime at 4315 feet. At five feet in this formation, it swabbed 186 barrels of oil and 15 bailers of water in 24 hours. While finding this deeper pay is an interesting discovery, it does not seem likely, from the Comar well's present showing, that it will lead to other drilling in search of it. This well made 1350 barrels in the Wilcox, but went dead, and was deepened when

(Continued on page 54)

Drilling Operations in Oklahoma, Kansas and N. Texas

	April 25 Loc.	Rigs	Drg.	S.D.	Total	Week Ending April 18 Loc.	Rigs	Drg.	S.D.	Total
OKLAHOMA										
Burbank	...	3	25	14	42	9	8	50	...	67
Other Osage	11	17	74	1	117	11	17	78	11	117
Bristow-Cushing	9	24	129	34	196	14	22	127	32	195
North Oklahoma	11	31	93	52	187	8	15	98	51	172
South Oklahoma	8	36	164	80	288	11	13	140	47	211
Muskogee	...	12	28	19	59	...	10	31	27	68
Okmulgee-Bristow	4	66	161	26	257	4	75	147	32	258
Tonkawa	...	3	25	14	42	...	3	27	14	44
Wewoka-Cromwell	22	33	239	22	316	19	28	265	25	337
Total Oklahoma	74	218	939	239	1470	76	191	963	239	1469
KANSAS	112	80	294	127	613	98	79	304	125	606
NORTH TEXAS										
Eastland County	...	1	23	6	30	...	...	25	10	35
Stephens County	...	12	35	32	79	...	12	33	31	76
Texas Panhandle	...	14	30	12	56	...	15	27	12	54
Mexia District	...	24	26	6	56	...	29	33	8	70
E. Tex. Wildcats	...	10	9	21	40	...	9	12	25	46
W. Tex. Wildcats	...	26	121	88	235	...	35	109	87	231
Wichita Falls	...	77	162	49	288	...	81	176	54	311
Total N. Texas	...	164	406	214	784	...	181	415	227	823
GRAND TOTAL	186	462	1639	580	2867	174	451	1682	591	2898

Completions in Oklahoma and Kansas Week Ended April 25

OKLAHOMA

Carter County

Company	Well No.	Location	Depth	Initial Production
Newstadt	1	C SW SW SW 27-1S-3W	3050–3200	20
Humble	3	C SE NE SE 28-1-3W	3187–3207	270, 10M
Magnolia	1	C NW NE SW 34-1-3W	3282–3319	35
Gypsy	1	C SE SE NE 28-2-3W	2025–2078	12M
Magnolia	14	C NW NW NW 31-2-2W	2270–3110	100
Schermerhorn et al	4	SWc NW SE 5-3-2W	2517–3148	20
Southern	4	C NE NW NW 5-3-2W	2159–2880	40
Schermerhorn	4	SWc SE SE 8-3-2W	2566–3291	40

Creek County

Pure	2	NWc NE SW 32-17-8E	3497–3522	50
Joemack	2	NWc NE NE 1-16-8E	2775–2810	25
J. H. Wright	8	SWc NW SE 24-17-10E	1801–1830	15
Riverland	12	SWc SE NE SE 8-16-12E	2002–2020	140
Phillips	2	C NE SE NW 24-14-9E	2927–2963	50
Vaughn-Wheeler	5	NEc SW 27-18-10E	T.D.2600	Dry
S. J. Smith	3	CWL SE SW 3-17-11E	T.D.2368	Dry
Twin State	2	C SE SW NW 34-16-9E	T.D.3578	Dry
Transcontinental	2	C NE NW SW 34-16-9E	T.D.3050	Dry
Twin State	1	SWc 22-14-9E	T.D.3147	Dry
Phillips	2	C NW SW NE 24-14-9E	T.D.3150	Dry

Garfield County—Garber

Cosden	40	C NE NE SE 13-22-4W	2319–2331	500
Sinclair	14	C NE NW NE 19-22-3W	2179–2189	50

Grady County

Briscoe-Hall	1	C SE SW 2-4-8W	1367–1427	2M

Hughes County—Papoose

I. T. I. O	1	C NW NW SW 1-9-9E	3386–3398	505
Independent	1	C NE NE SE 2-9-9	3361–3382	1267
Independent	5	C NW SE NE 2-9-9	3337–3372	125, 10M
Independent	6	C NE SE NE 2-9-9	3333–3378	125
Independent	8	C SE SE NE 2-9-9	3337–3373	1200
Cosden	2	C SE SW NW 3-9-9	3267–3331	50
Robinson-Amerada	6	C NW NE NW 4-9-9	3317–3324	260

Hughes County

Tidal Osage	1	SEc SW SE 4-9-11E	2930–2964	100
Kingwood et al	1	C NW NW NW 29-9-10E	T.D.4270	Dry

Jefferson County

Carter	1	C NW SE SW 34-6-5W	1299–1309	50

Kay County—Braman

Comar	2	C SE NE SW 21-29-1W	1927–1930	236
Ona-Carter	1	C NW NW NE 20-29-1E	1973–1982	33M

Kay County—Hubbard

Marland-Amerada	1	SEc NW 1-26-2W	2046–2055	306
Marland	1	NEc NW NE 12-26-2W	2537–2543	147
Marland	5	NWc NE NE 12-26-2W	2549–2552	156
Prairie	1	C NW NW SE 1-26-2W	2530–2543	220
Prairie	2	C NE NW SE 1-26-2W	2530–2534	625
Prairie	3	C NW NE SE 1-26-2W	2520–2534	607

Kay County—Tonkawa

Texas Co	4	C SE SW SW 27-25-1W	4189–4210 OWD	1433
Comar	19	C SW SW 34-25-1W	4125–4180	1138

Muskogee County

H. L. Jolly	7	C NE NE NE 2-14-18E	1092–1110	8
J. W. Hale	2	NEc SW SE NE 7-14-19E	T.D. 880	Dry

Noble County—Perry

Bu-Vi-Bar	1	C SW SW 15-21-2W	1902–1912	70

Okfuskee County

Josey	1	SEc NE NE 32-12-11E	3010–3015	100, 30M
Shaffer	1	SWc SW NE 25-11-9E	3119–3147	12M
Tidal-Osage et al	1	C SE SE SE 33-10-11E	1546–1571	1¼M

Okfuskee County—Papoose

Carter	4	C SE NW SE 33-10-9E	3357–3362	194
T. B. Slick	2	C NW SW SE 35-10-9	3040–3045	20
Amerada	2	C NW SW SW 36-10-9E	3358–3379	472
Prairie	2	C SW SE SW 34-10-9E	3263–3309	742

Okmulgee County

Prairie	12	C SE SE NW 13-11E	2438–2451	50
Sheridan	1	NEc SE NE 4-15-11E	1962–2013	70
Beggs	14	CNL NW NW 10-15-11E	1987–2037	25
Holly	1	SEc NE 32-13-12E	2222–2235	12M
Cosden	17	NEc SW 12-13-13E	2470–2550 OWD	20
C. M. Roberts	4	NEc SE NW 17-13-13	1636–1655	15
McGranahan	4	SWc SE NE 15-13-14E	1932–1941	50
Lucky Scott	8	CWL SW NW 23-13-14E	1733–1762	
Iron Mtn	8	SWc SE NW 24-13-14E	1932–1947	5
Laurel	1	NEc NW SW 16-13-15E	2302–2311	25
E. Price	7	C SW NW 6-14-15E	1591–1596 OWD	25
Margay	2	SWc NE 27-16-12E	T.D.2692	Dry
Briscoe et al	1	SEc SW NW 26-15-12E	T.D.2210	Dry
Detrick et al	1	SWc NW SW 20-13-12E	T.D.3210	Dry
W. C. Newman	2	CEL NE NE 29-12-12E	T.D.3460	Dry
Okla. Kan	3	C SW NE 26-13-13E	T.D.2200	Dry

Osage County

Skelly et al	1	CSL SE 3-21-9E	2238–2308	35
Twin State	11	NW SE SE NW 32-22-10E	1765–1799	15
Peters	4	SE SW SE SE 12-23-8E	2051–2098	54
Beacon	3	NW SW NW SW 21-23-8E	793– 825	15
Owen Osage	320	SE NW NE 32-24-12E	1811–1817	6M
Olean	4	SW NW SE 19-25-9E	2269–2299	125
Owen Osage	322	NW SW SE 8-27-11E	585– 685	5½M
Owen Osage	321	CEL SW 10-27-11E	1900–1904	1½M
Riverland	1	NWc 8-24-8E	T.D.2949	Dry
Ramsey	1	NW SW NW NW 27-28-11E	T.D.1823	Dry

Osage County—Burbank

Company	Well No.	Location	Depth	Initial Production
Carter	3	C NE NW NE 20-26-6E	2935–2981	91
Phillips	3	C SW SE NE 11-27-5E	2972–3036	550
Phillips	8	C NE SE NE 11-27-5	2940–2998	150
Phillips	10	C SE NW NE 11-27-5	3021–3088	250
Phillips	11	C SW NE NE 11-27-5	2946–3007	150
Phillips	4	C NW SW SW 12-27-5	2975–3033	700
Carter	10	C SE NE NE 13-27-5	2915–2984	245
Phillips	11	C SW NE NE 18-27-6E	2940–2992	262
Texas	13	C SW NW NW 18-27-6E	2920–2975	200

Payne County

Marland	1	SEc SW SE 7-18-5E	1548–1554	25

Seminole County—Cromwell

Southwestern	6	C NW SE NE 4-10-8E	3420–3481	450
Pure	1	C SE SE SW 33-11-8E	T.D.1427	Dry

Seminole County—Wewoka

Ramsey	1	C NE NW SE 31-8-8E	3230–3248	3800

Stephens County

Fisher-Brannon	4	SEc NE NW 22-1S-8W	2004–2025	50
Elmer Evans	1	SEc SW SE SW 27-1-8W	1401–1412	3¾M
Gant et al	6	NWc NE NW SE 32-1-8W	2250–2278 OWD	60
Winkley et al	1	C NE SE SE 26-1-9W	T.D.2350	Dry
Gibbons et al	1	NWc SW NW 33-1-7W	T.D.2860	Dry
Crump-Beard	1	SEc SW NW SW 14-1-8W	T.D.1045	Dry
Magnolia	2	NEc NW NE 24-2-8W	T.D.2340	Dry

Tillman County

A. E. Spears	1	NWc NE SW 10-4S-18W	T.D.1590	Dry

Tulsa County

Glidden	1	SWc SE NW 14-19-10E	1580–1611	2M
Echo	1	NWc SE 5-19-12E	1921–1927	15
Highway	9	SEc SW NE SW 20-19-12E	2102–2205	15
Nowata	2	NEc SE 30-19-12E	2084–2089	9M
Sheridan	1	SEc NW NE 15-16-12E	1909–1923	5M
Bradstreet	1	SWc 27-17-12E	T.D.3205	Dry
Suppees	1	NWc SE SW 1-16-12E	T.D.2408	Dry

Wagoner County

Enfisco	9	SEc SE 32-17-15E	1777–1797	25
Sewell-Gillett	1	NWc 30-17-17E	1318–1338	1½M
A. E. Carder	2	SEc SW SE NE 25-18-15E	1471–1483	35
Martin	1	NEc NW 19-17-15E	T.D.1810	Dry
R. W. Sawyer	2	C N½ NW 4-17-18E	T.D.1035 OWD	Dry

KANSAS

Butler County

Blue Stem	3	CNL SE SW 5-27-6E	2718–2738	65
Tobin et al	1	NWc SE 12-29-6E	T.D.2002	Dry

Chautauqua County

T. B. Slick	2	CWL 10-34-9E	1669–1685	80
Fisher	1	NWc SW SW 11-33-10E	T.D.1500	Dry
Noble	1	NEc SE 2-33-11E	T.D.1994	Dry
Prairie	76	C SE NW SE 22-33-11E	1230–1270 OWD	210

Cowley County

Marland	6	NEc SE NE 9-33-3E	2541–2554	100
Texas	1	NEc NW NE 13-32-3E	T.D.3392	Dry

Cowley County—Rainbow Bend

W. Phillips	1	NEc SW SW 29-33-3E	T.D.3800	Dry

Greenwood County

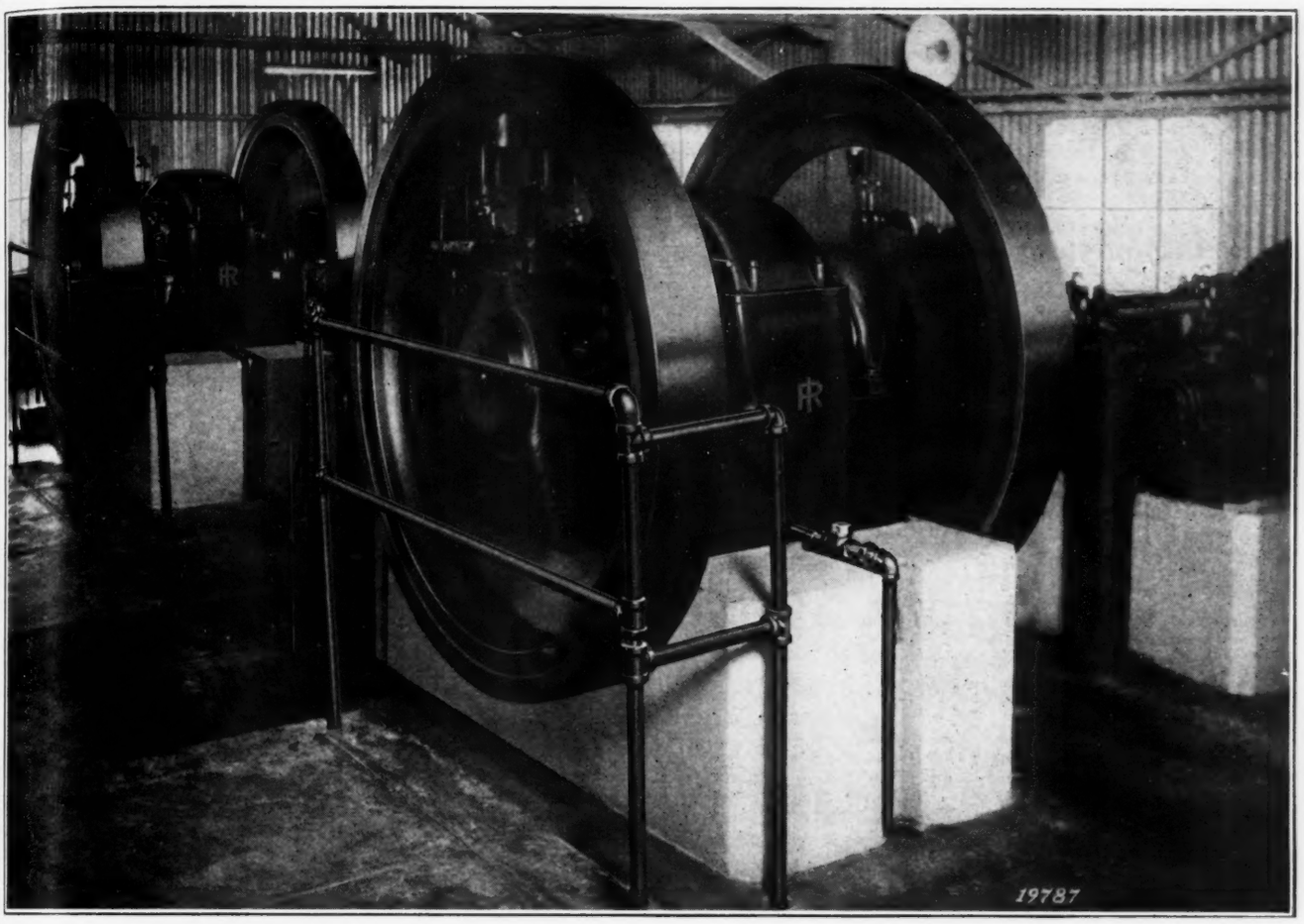
Skelly et al	2	NEc NW 13-22-10E	2165–2202	240
Derby-Davis	2	SWc NE NE 13-22-10E	2108–2151	30
Allen et al	2	NEc SW NE 13-22-10E	2115–2143	150
Jennings et al	5	SWc NW SE 33-22-11E	1898–1933	60
Transcontinental	7	NWc SE SW 2-23-9E	2335–2361	200
Phillips	4	NWc SW NW 15-23-9E	2335–2412	150
Reverly et al	1	SEc NE NE 16-23-9E	2376–2418	150
Mission et al	46	CSL B½ S½ SE 29-23-10E	2312–2357	50
Mission et al	48	NEc NW NE SE 29-23-10	2361–2405	40
Phillips	7	NEc NW NW 32-23-9E	2260–2335	240
Roth-Mission	6	CEL NE NE 1-24-9E	2305–2343	100
Transcontinental	12	CEL NW SE 11-24-9E	2158–2198	150
Transcontinental	15	CNL SW SE 11-24-9E	2140–2179	70
Gypsy	6	CWL SW SE 27-24-9E	2265–2295	200
Federal et al	6	CWL NW NW 6-24-10E	2297–2371	100
Lima-Iola	2	NEc SW 15-24-12E	1708–1723	15
Clark & Son	2	SEc NE SE NW 15-24-12E	1749–1769	85
Gt. Southern	23	SWc NE SW SW 2-26-8E	2380–2404	500
Syndicate	3	CSL SE NE 13-22-10E	T.D.2211	Dry
Phillips	8	NWc SW NE SE 28-22-11	T.D.2100	Dry
Roth-Faurot	1	NWc NE 11-24-8E	T.D.2615	Dry
Smith et al	1	SEc NE NW 5-23-9E	T.D.2510	Dry
Bisango et al	1	CSL SE SE 31-24-13E	T.D.1642	Dry

Sumner County

Gypsy	1	SWc NW 23-34-2E	2678–3445	40M

Woodson County

Lassen et al	1	SWc SE SE 14-25-13E	1376–1415	80
McCann-Johnson	1	NWc NE NE 23-25-13E	1406–1415	40



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(Continued from page 51)

shooting failed to revive it. It will be drilled deeper into the lime.

Tonkawa deep sand wells now number 96, of which 48 are either dead altogether or are making increasing amounts of water, with decreasing amounts of oil. Most of the dead wells have been shot in the effort to bring them back on production, but generally without success, and it appears likely that they will remain dead permanently, as far as flowing is concerned. Some will be swabbed to get what production is possible, while others will be pumped, if a satisfactory pumping method is evolved for the deep sand.

The next few weeks will see some interesting experiments in pumping these deep wells and the results will be closely watched. Amerada Petroleum Corp.,

Completions in North Louisiana and Arkansas, Week Ended April 23

LOUISIANA

Spring Hill

Company	Well	Location	Depth	Yield
Standard Oil Co	Maynor No. 1	34–23–10	2635	50m. gas

Cotton Valley

Ohio Oil Co	Bodcaw No. 20	15–21–10	2540	250

Caddo Parish

Standard of Indiana	Robertshaw No. 56	13–21–15	1690	15
Tholl Oil Co	H. I. & B. Co. No. 7	14–21–15	1643	20

Bellevue—Bossier Parish

Humble O. & R. Co	B. & W. B-5	14–19–11	375	20

Union Parish

Texas Oil Co	Finney et al No. 1	9–20–4E	2130	10m. gas

TEXAS

Waskom—Harrison County

Belmont O. & G. Co	Sanders No. 1 Jenkins HRS		1008	5m. gas
Waterman Lbr. Co	Fee No. 1 Bedford HRS		1895	35 m. gas
Gulf Refining Co	E. M. Hudspeth No. 1 Bedford HRS		2295	35m. gas

ARKANSAS

Union County

Jones & Ganzell	Murphy No. 1	36–19–14	3000	Dry

Smackover

Gulf Refining Co	G. H. Alphin No. 8	10–16–15	2395	350
Gulf Refining Co	John Berry No. 8	8–16–15	577	junked. ab.
Gulf Refining Co	John Goodwin No. 3	32–15–15	2340	junked ab.
Gulf Refining Co	Halloway No. 2	6–16–16	2260	40
Gulf Refining Co	Lecroy No. 5	16–16–15	2496	300
Gulf Refining Co	Murphy Hardy No. 13	4–16–15	2363	5,000
Gulf Refining Co	Murphy Hardy No. 14	4–16–15	2352	10,000
Hunt et al	Holton B-7	26–15–17	2387	50
Kouri et al	Snowhill Bapt. Church No. 1	28–15–15	2025	130
Standard Oil Co	Umstead No. 13	33–15–15	2343	35m. gas
Texas Oil Co	Neely No. 4	27–15–16	2050	100
Unity Pet. Co	Umstead No. 3	33–15–15	2001	75
Barnsdale & Foster	Murphy No. 4	17–16–15	2523	700
J. W. Clark	Palmer No. 3	6–16–15	2470	800
Coates & Sowell	Bilyiu No. 1	8–16–15	2461	500
Sam Cook	Murphy No. 1	9–16–15	2485	6,000
Crusader Oil Co	Graves No. 5	8–16–15	2398	700
Federal Pet. Co	Lawton A-7	10–16–15	2440	10,000
George & Jones	Umstead No. 4	4–16–15	2370	1,500
W. H. Gilliland	Hodges A-2	6–16–16	2260	150
Hickman et al	Graves No. 9	3–16–15	2390	2,000
Humble O. & R. Co	Flannigan No. 5	6–16–15	2387	2,100
Humble O. & R. Co	Flenniken B-2	9–16–15	2473	1,000
Humble O. & R. Co	Pate No. 7	10–16–15	2383	1000
Humble O. & R. Co	Umstead No. 6	5–16–15	2395	1,000
Imperial O. & Gas Co	Murphy No. 6	9–16–15	2457	10,000
Lion Oil & Ref. Co	Murphy D-3	8–16–15	2505	2,500
Nat. Gas & Pet. Co	Bilyiu No. 5	9–16–15	2235	40m. gas
Nat. Gas & Pet. Co	Murphy No. F-2	9–16–15	2395	900
Nat. Gas & Pet. Co	Murphy F-1	9–16–15	2465	500
Ramage et al	Cook No. 2	16–16–15	2473	500
Roxana Pet. Co	T. D. Murphy No. 2	7–16–15	2383	s.w.aband.
Simms Oil Co	Sallie Cook No. 4	16–16–15	2365	20m. gas
Sun Oil Co	Hays No. 3	3–16–15	2367	1,000
Sunny Jim Oil Co	Flannigan No. 1	9–16–15	2125	30
Bradley & Cazort	Pate No. 1	16–17–17	2475	dry ab.

Completions in North-Central Texas, Week Ended April 25

Archer County

Company	Well No. Farm	Loc.-Survey Section	Depth	Init. Prod.
W. Phillips	1-Wilson	Howard	1717–1719	130
Staley-Wynn	10-Wilson	A. T. N. C. 23	1601–1617	65
Gulf	12-Nichols	A. T. N. C. 37	1550–1553	100
Wirt-Franklin	4-Parrish	H. & T. C. 26	1555–1561	100
Gulf	3-Kunkle	Hardaway	1151–1169	65
Gulf	4-Kunkle	Hardaway	1174–1185	25
White Bros	9-Kunkle	Hardaway	1040–1060	260
Gulf	3-Rogers	T. E. & L. 2405	1317–1319	115
Humble	10-Stampfli	T. E. & L. 2408	1360–1372	40
Shaw-Rathke	4-Hayter	T. E. & L. 1588	1319–1321	85
Gulf	1-Kunkle	T. E. & L. 1593	1191–1196	5
Hart et al	6-Kunkle	T. E. & L. 1594	1234–1277	135
Murchinson et al	4-Echols	T. E. & L. 2405	1324–1327	135
Harvey et al	3-Kunkle	Hardaway	1135–1157	35
Shamrock	3-Boren	Newman	1071–1080	50
Texhoma	5-Wilson	A. T. N. C. 31	T. D. 1638	Dry
Oasis	1-Wilson	Kirk	T. D. 1676	Dry
H. Lewis	1-Parrish	A. T. N. C. 98	T. D. 1603	Dry
Sun	1-Graham	Aber Crombie	T. D. 1226	Dry
County Line	2-Stampfli	T. E. L. 2408	T. D. 1400	Dry
Maer Stanforth	1-York Est	T. E. L. 1583	T. D. 1501	Dry
British Amer	6-Rogers	T. E. L. 2400	T. D. 1509	Dry
Gulf	1-Roach	T. E. L. 1595	T. D. 1321	Dry
Panhandle	2-Rogers	T. E. L. 1596	T. D. 1350	Dry
Andrade-Truman	1-Greenway	T. E. L. 2402	T. D. 1404	Dry
Murchinson et al	3-Echols	T. E. L. 2405	T. D. 1348	Dry
Pet. Prod	1-Hausler	McCoy 17	T. D. 1146	Dry
Sid Richardson	1-Ward	T. E. L. 1374	T. D. 1300	Dry

Brown County

Mendenhal et al	3-Newton	Miller	T. D. 1261	85
Mahlstadt-Mook	8-Newton	Miller	1268–1287	200
Root-Rhodes et al	4-Newton	Miller	1265–1289	180

Carson County

Jack Crosby	1-Burnett	I. & G. N. 114	2876–2881	175

Eastland County

States	4-Sumrall	T. N. O. 6	2115–2117	50

Falls County

Myron et al	1-Graffenried	DeAguirre	T. D. 2708	Dry
Falsey	1-Penny	Menchaca	T. D. 2025	Dry

Freestone County

Farrish et al	7-Jackson	Wortham	T. D. 3007	150
Humble	13-Dodd	Ritchie	2985–3028	300
Humble	18-Dodd	Longbotham	2986–3026	1000
Quaker	1-Bays	Longbotham	T. D. 3157	Dry

Hutchinson County

Dixon Creek	1-Smith	Blk Y-Sec. 14	T. D. 2960	720

Limestone County

Pure	13-Boyd	McNulty	2989–3018	40
Pure	15-Boyd	McNulty	3005–3024	175

Milam County

Nelson	1-Lattere	Acosta	T. D. 3000	Dry
Beverly	2-Buer	Shields	T. D. 1410	Dry
Mills-Bennett	1-Bremond	Ciento	T. D. 2935	Dry
Fallis	2-Hilliman	Hill	T. D. 1302	Dry

Montague County

Company	Well No. Farm	Loc.-Survey Section	Depth	Init. Prod.
Texas	1-Salmon	Little 1	T. D. 1685	Dry
Humphreys-Body	1-Howard	Chambliss	824–842	55

Navarro County

Humble	32-Humphreys	Smith	1516–1572	40
Gulf	7-Smith	John Haven	1580–1650	28
Geo. Kent	1-Kent	John Haven	1570–1640	20
Humble	18-Irvine	Taylor	1553–1588	15
Humble	7-Kent	Smith	1584–1650	20
Roxana	1-Smith	Havens	1601–1643	40
Roxana	20-Smith	Havens	1580–1643	50
Skelly	1-Bailey	Rahm	1603–1638	30
Simms	1-Smith	Autrey	T. D. 3047	Dry

Robertson County

Bland et al	1-Wilkerson	Ruiz	T. D. 4312	Dry

Stephens County

Landreth	1-Gratz	T. E. L. 2027	2890–2892	105

Throckmorton County

Cunningham et al	1-Portwood	Garrett	T. D. 1503	Dry

Wichita County

White-Rubson	1-Reilly	Curry	T. D. 1989	Dr

Wilbarger County

Castleberry	2-Castleberry	H. & T. C. 83	T. D. 1380	Dry
Hoffer	1-Waggoner	H. & T. C. 49	T. D. 2360	Dry
Atlantic et al	1-Waggoner	H. & T. C. 24	T. D. 2424	Dry
Atlantic	2-Zipperle	H. & T. C. 80	1299–1306	242
Continental	3-Zipperle	H. & T. C. 80	1804–1822	40
Humble	11-Castleberry	H. & T. C. 83	1282–1324	225
Humble	12-Castleberry	H. & T. C. 83	1282–1316	250
Kolp et al	6-Waggoner	H. & T. C. 99	1209–1220	2M
McCamey et al	10-Stephens	H. & T. C. 83	1306–1336	40
McCamey et al	14-Stephens	H. & T. C. 83	1309–1337	60
Oxford	2-Waggoner	H. & T. C. 99	2023–2046	75
Staley et al	4-Stephens	H. & T. C. 83	1273–1307	30
Staley et al	5-Stephens	H. & T. C. 83	1272–1310	1M
Staley et al	6-Stephens	H. & T. C. 83	1270–1305	30
Gulf	1-Waggoner	H. & T. C. 50	1788–1797	187

Wise County

Phillips	1-Carter	Hendrick	T. D. 1475	Dry

Young County

Janson	1-Vernon	Portevant 2	T. D. 1305	Dry
Read et al	1-Cloud	T. E. & L. 758	T. D. 1510	Dry
Norton et al	3-Hamilton	Hollman 1	1188–1202	150
Gulf	1-Hamilton	Crawford Pasture	1201–1203	154
Humble	7-Schlegel	B. B. B. & C. 1	1189–1191	20
Murchinson et al	11-Schlegel	B. B. B. & C. 1	1190–1197	350
Texas	4-Gambrill	B. B. B. & C. 1	1192–1222	175
Texas	12-Gambrill	B. B. B. & C. 1	1210–1212	282
Texas	14-Gambrill	B. B. B. & C. 1	1197–1206	230
Texas	20-Gambrill	B. B. B. & C. 1	1203–1215	615
Texas	17-Gambrill	B. B. B. & C. 1	1195–1208	351

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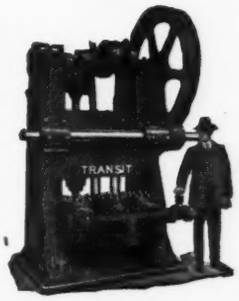

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Gypsy Oil Co. and Comar Oil Co. are preparing to try out a long-stroke pumping outfit, in which the Fetty long stroker and the Penrod working barrel will be used with 2½-inch tubing. The first well to be thus equipped is the Amerada's No. 37. Goltry.

Shooting of Tonkawa deep wells seems to have varying effects, sometimes increasing production considerably, sometimes having no apparent effect, and sometimes causing the well to go dead. As an instance, Comar Oil Co. shot its No. 7-W L. E. Endicott with 50 quarts, but the shot did not help production. The same company shot its 12-W Gaume with 80 quarts, and the well started showing first water after the shot. This company's No. 15-W Blubaugh was shot with 40 quarts and jumped from 110 barrels to 945 barrels daily. Wentz Oil Corp. shot its No. 50 with 40 quarts while it was flowing 1800 barrels. After the shot it stopped flowing and is now swabbing about 700 barrels a day.

In the Braman field, northwest of Tonkawa, 12 wells are producing about 2700 barrels daily. The Comar Oil Co. brought in its No. 2 Duncan, on the discovery farm, making 247 barrels in sand from 1930 to 1935 feet. Wells drilling across the line in Kansas, adjacent to the Braman development, have not been successful in finding production in the shallow sands. The Tidal-Osage Oil Co. No. 1 Milligan, in the NEc SE of 6-35-1E, is drilling below 2610 feet. Haworth & Wilson No. 1 Walker, in the SEc NW of 16-35-1E, has been plugged and abandoned at total depth of 2600 feet. National Refining Co. lost the hole at 916 feet in its No. 1 Hebozel, in the SWc of 14-35-1E, and skidded the rig to make a new start.

Burbank Declining Slowly

Although a number of wells have been added to Burbank's producing column in the past two weeks, they have all been of small initial output, the largest coming in for 350 barrels, and they have not been sufficient to prevent the field's total production from declining. Two wells have recently been abandoned on account of small production and presence of water, these being Carter Oil Co. No. 2 and No. 3 in the SE of 1-26-5, in the southern end of the field. Midland Oil Co. intended to plug its No. 13, in the NW of 14-27-5, but was not allowed to do so, the Osage agency deciding that it had not been drilled deep enough. It is now being taken on down. South of the field, the Midland Oil Co. wildcat in the SWc NE of 12-25-5 has been averaging 50 barrels of 43 gravity oil for several months. The company has pulled the tubing from this well and is deepening it in search of a second pay in the Burgess sand.

Papoose Extending East

East end developments in the Papoose field have shown a considerable rising structurally, and developments there have been given encouragement to the idea that the field may extend for some distance in that direction. The Minnehoma Oil Co. No. 1 Cain, in the SWc NW NE of 1-9-9 topped the sand at 3324 feet, which would indicate that it is about 90 feet high on structure, and probably too high to expect much oil. It has been drilled to 3366 feet and at last reports was making 38½ million cubic feet of gas.

Amerada Petroleum Corp., which holds considerable acreage in this part of the field, is drilling several wells. Its No. 1 Dacon, in the SEc of 36-10-9, had 20 million feet of gas at 3001 feet, after having cased off 17 million feet at 2997 feet. The same company's No. 1 Palmer, in the SEc SW SW of 36-10-9, is making 20 million feet of gas and 600 barrels of oil daily in sand from 3339 to 3374 feet. Phillips Petroleum Co. No. 3 Arbor, in the SWc NE SE of 3-9-9, started off at 840 barrels in sand from 3374 to 3395 feet.

No production has been found in the Wilcox sand at Papoose, although several wells have been drilled down to it, and in fact, Wilcox sand developments in the entire Cromwell-Papoose-Wewoka district have been uniformly unfavorable. Typical of this condition is the Kingwood Oil Co. No. 4 in 35-10-9, which found the Wilcox at 4124 and has been drilled to 4168 feet where it has a hole full of water. The same company had a hole full of water from 4250 to 4270 feet in 29-9-10. Two wells in Papoose are now deepening to the Wilcox, the Prairie Oil & Gas Co. No. 9, in the SEc NE SW of 34-10-9 and the Berry Petroleum Co. No. 1 in 4-9-9.

In the Cromwell field, The Shaffer Oil & Refining Co. well in the NE of 10-10-8, which discovered the Wilcox sand in that field, is being abandoned, the tools having been torn down. This well was drilled to total depth of 4185 feet. It had a good showing of oil in the Wilcox, but never was able to shut off water satisfactorily. Roxana Petroleum Corp., drilling a west offset to the Shaffer well, is reported to have had a showing of oil at 4190 feet and will test it out. They are running the 5-inch casing to try to shut off the hole full of water found from 4120 to 4145 feet. The only other Wilcox sand test drilling at Cromwell is Carter Oil Co. No. 4 Hill, in 9-10-8. At last reports, this well was drilling in shale at 4100 feet.

Russell County Developments

In Russell county, Kansas, production is holding up at around 1450 barrels daily, from seven wells, and from present drilling activity this output will be maintained for some time to come, as wells can be completed at the rate of about one a week for the next few weeks. An important test in the vicinity is that of the Midwest Refining Co. in its No. 1 Booth, in 32-11-15W, now drilling at 300 feet.

Valerius Oil & Gas Co. got the top of the gas sand at 2424 feet in its No. 1 Sutton, in 5-12-15W, but are held up by collapsed 8-inch pipe, and may have a long fishing job. This gas will be bradenheaded and the well taken on down to the oil sand. The Midwest is spudding in its No. 1 Ed Oswald, No. 2 and No. 3 are rigs which will be spudded in within a short time. Streeter & Stearns will make the first deep test below the 300-foot pay in their No. 2 Ed Oswald. They are looking for the so-called second pay at about 3250 feet. This well was productive in the regulation horizon, but was drilled too deep and they were unable to plug it back satisfactorily. The same operators have rig up for No. 4 Ed Oswald, in the NEc NW SW of 8-12-15.

Valerius Oil & Gas Co. has rigs up for No. 6 and No. 7 on the Ed Oswald, in 8-12-15. This company's No. 2 Carrie Oswald, in the SEc SW SE of 8, the farthest location east of the discovery well, is drilling below 2620 feet, and probably will be the next well in. Production of the Russell county field by leases during the past week was as follows:

Company	Lease	Daily av. prod.
Valerius Oil & Gas, Ed. Oswald	....	812
Valerius Oil & Gas, Oswald Valerius		350
Valerius Oil & Gas, Carrie Oswald	..	108
Derby Oil Co., C. Sutton	.....	109
White Eagle O. & R., Dodge	.....	70
Total daily production	.....	1449

Gulf Coastal Texas Completions, Week Ended April 25

Company	Lease-Well	Field	Depth	Prod.
Vacuum Oil Co.	Barrett 7	South Dayton	3520	1200
Hoffer Oil Co.	Pickett 2	South Dayton	3625	300
Oxford Oil Co.	Harrison 4	South Dayton	3520	600
Gulf Production Co.	John Hamman 2	South Dayton	3500	250
F. M. Long	Andrews 2	South Dayton	.....	Aband.
Gulf Production Co.	Stateland 32	Goose Creek	2700	100
Gulf Production Co.	M. Granger 1	Orange	4450	750
Gulf Production Co.	M. Granger 2	Orange	4500	2200
Gulf Production Co.	Lee Hager Fee 17	Orange	3500	315
Gulf Production Co.	Chesson "A" 4	Orange	4725	250
Gulf Production Co.	Winfree Fee 1	Orange	3325	30
Gulf Coast Oil Corp.	Leon 1	Orange	3325	7
Humble Oil & Refining Co.	Merchant 1	Hull	4080	5000
				15% B. S. & W.
The Texas Co.	Hannah Fee 1	Hull	3065	2200
The Texas Co.	Hannah Fee 2	Hull	3190	200
Houston Production Co.	Taylor 8	Hull	4135	450
				40% B. S. & W.
Gulf Production Co.	Phoenix 48	Hull	3250	250
Gulf Production Co.	Scarborough 15	Hull	3550	50
Eagle Point Oil Co.	Wheelock 3	Hull	.....	Aband.
Gulf Production Co.	Invincible Oil 3	Blue Ridge	2650	400
Humble Oil & Refining Co.	L. J. Wilson 2	West Columbia	3300	100
Anderson & Munson	Hodges 2	Batson	1060	75
Acorn Oil Co.	Brite 3	Batson	605	5
Deutser Oil Co.	Trustee 11	Batson	1043	3
Paggi Bros.	Tul Acre 14	Saratoga	1060	15

OKLAHOMA

41-43 Water White Kerosene
Bell Oil & Gas Co., Tulsa, Okla.
Cameron Refg. Co., Ardmore, Okla.
Imperial Oil Mktg. Co., Tulsa, Okla.
Lubrite Refining Co., St. Louis, Mo.
Tidal Refg. Co., Tulsa, Okla.

42-44 Water White Kerosene
Imperial Oil Mktg. Co., Tulsa, Okla.

44-45 Kerosene
Anderson-Prichard Oil Corp., Oklahoma City, Okla.

44-46 Water White Kerosene
Altitude Petroleum Co., Tulsa, Okla.

PENNSYLVANIA

45 Water White Kerosene
Bradford Oil Refg. Co., Bradford, Pa.
Butler County Oil Refg. Co., Bruin, Pa.
Carnegie Refg. Co., Carnegie, Pa.
Continental Refining Co., Oil City, Pa.
Emery Mfg. Co., Bradford, Pa.
Empire Oil & Grease Co., Inc., Oil City, Pa.
Independent Refining Co., Oil City, Pa.
Kendall Refining Co., Bradford, Pa.
Lucinda Refining Co., Lucinda, Pa.
McKean County Refining Co., Bradford, Pa.
Mutual Refg. Co., Warren, Pa.

46 Water White Kerosene
Emery Mfg. Co., Bradford, Pa.
McKean County Refining Co., Bradford, Pa.
Mutual Refg. Co., Warren, Pa.

47 Water White Kerosene
Empire Oil & Grease Co., Inc., Oil City, Pa.

Neutral Oils

GULF COAST

200 Vis. No. 2-2½ Color Unfilt. Pale
Keen & Woolf Oil Co., Houston, Texas

300 Vis. No. 2-2½ Color Unfilt. Pale
Keen & Woolf Oil Co., Houston, Texas

500 Vis. No. 3 Color Unfilt. Pale
Keen & Woolf Oil Co., Houston, Texas

750 Vis. No. 3-3½ Color Unfilt. Pale
Keen & Woolf Oil Co., Houston, Texas

200 Vis. No. 4½-5½ Color Unfilt. Red
Keen & Woolf Oil Co., Houston, Texas

300 Vis. No. 4½-5½ Color Unfilt. Red
Keen & Woolf Oil Co., Houston, Texas

500 Vis. No. 4½-5½ Color Unfilt. Red
Keen & Woolf Oil Co., Houston, Texas

750 Vis. No. 4½-5½ Color Unfilt. Red
Keen & Woolf Oil Co., Houston, Texas

1200 Vis. No. 3½-4 Color Unfilt. Pale
Keen & Woolf Oil Co., Houston, Texas

2000 Vis. No. 3½-4½ Color Unfilt. Pale
Keen & Woolf Oil Co., Houston, Texas

120 Vis. Black
Keen & Woolf Oil Co., Houston, Texas

210 Vis. Transmission Lube.
Keen & Woolf Oil Co., Houston, Texas

ILLINOIS

180 Vis. No. 3-3½ Asso. Filt.
Indian Refining Company, Lawrenceville, Ill.

180 Vis. No. 5 Asso. Filt.
Indian Refining Company, Lawrenceville, Ill.

OHIO

90 Vis. at 100° F. No. 2 Color (Pale)
Craig Oil Co., Toledo, O.

200 Vis. at 100° F. No. 3 Color (Pale)
Craig Oil Co., Toledo, O.

OKLAHOMA

200 Vis. No. 3 Color
Bell Oil & Gas Co., Tulsa, Okla.

PENNSYLVANIA

150 Vis. No. 3 Asso. Filt.
Butler County Oil Refg. Co., Bruin, Pa.
Emery Mfg. Co., Bradford, Pa.
Pennsylvania Oil Products Refining Co., Warren, Pa.
Seneca Oil Works, Warren, Pa.

150 Vis. No. 4½ Filt. (Red)
Crystal Oil Works, Oil City, Pa.

180 Vis. No. 3 Asso. Filt.
Emery Mfg. Co., Bradford, Pa.
Seneca Oil Works, Warren, Pa.

200 Vis. No. 3 Asso. Filt.
Butler County Oil Refg. Co., Bruin, Pa.
Emery Mfg. Co., Bradford, Pa.
Empire Oil & Grease Co., Inc., Oil City, Pa.
Pennsylvania Oil Products Ref. Co., Warren, Pa.
Seneca Oil Works, Warren, Pa.

Cylinder Oils

PENNSYLVANIA

600 Steam Refined
Bradford Oil Refg. Co., Bradford, Pa.
Butler County Oil Refg. Co., Bruin, Pa.
Crystal Oil Works, Oil City, Pa.
Emery Mfg. Co., Bradford, Pa.
Lucinda Refining Co., Lucinda, Pa.

635 Steam Refined
Bradford Oil Refg. Co., Bradford, Pa.
Emery Mfg. Co., Bradford, Pa.

650 Steam Refined
Bradford Oil Refg. Co., Bradford, Pa.
Butler County Oil Refg. Co., Bruin, Pa.
Emery Mfg. Co., Bradford, Pa.
Independent Refining Co., Oil City, Pa.
McKean County Refining Co., Bradford, Pa.
Seneca Oil Works, Warren, Pa.

600 Flash
Bradford Oil Refg. Co., Bradford, Pa.
Butler County Oil Refg. Co., Bruin, Pa.
Emery Mfg. Co., Bradford, Pa.
Independent Refining Co., Oil City, Pa.
Kendall Refining Co., Bradford, Pa.
McKean County Refining Co., Bradford, Pa.
Waverly Oil Works, Pittsburgh, Pa.

600 Warren E
Butler County Oil Refg. Co., Bruin, Pa.
Pennsylvania Oil Products Ref. Co., Warren, Pa.

600 Oil City E
Butler County Oil Refg. Co., Bruin, Pa.
Carnegie Refg. Co., Carnegie, Pa.
Independent Refining Co., Oil City, Pa.
Pennsylvania Oil Products Ref. Co., Warren, Pa.

600 Filtered D.
Butler County Oil Refg. Co., Bruin, Pa.
Pennsylvania Oil Products Ref. Co., Warren, Pa.

Cold Test Stock (bright filtered)
Carnegie Refg. Co., Carnegie, Pa.
Kendall Refining Co., Bradford, Pa.
Mutual Refg. Co., Warren, Pa.
Pennsylvania Oil Products Ref. Co., Warren, Pa.
Warr-Penn Refining Co., Warren, Pa.

Cold Test Stock (dark filtered)
Carnegie Refg. Co., Carnegie, Pa.
Pennsylvania Oil Products Ref. Co., Warren, Pa.
Warr-Penn Refining Co., Warren, Pa.

Black Oil
Emery Mfg. Co., Bradford, Pa.

Wax Oil
Lucinda Refining Co., Lucinda, Pa.

Motor Oils

ILLINOIS

Indian Refining Company, Lawrenceville, Ill.

OHIO

Craig Oil Co., Toledo, O.

PENNSYLVANIA—100% PURE

Butler County Oil Refg. Co., Bruin, Pa.
Carnegie Refg. Co., Carnegie, Pa.
Continental Refining Co., Oil City, Pa.
Emery Mfg. Co., Bradford, Pa.
Empire Oil & Grease Co., Inc., Oil City, Pa.
Seneca Oil Works, Warren, Pa.
Waverly Oil Works Co., Pittsburgh, Pa.

Greases and Soap

Auto Soap
Schaeffer Bros. & Powell Mfg. Co., St. Louis, Mo.

Axle Grease
Schaeffer Bros. & Powell Mfg. Co., St. Louis, Mo.

Cup Grease
Litwood Oil & Supply Co., Ft. Worth, Texas
Schaeffer Bros. & Powell Mfg. Co., St. Louis, Mo.
Yuba Oil Refg. Co., Nacogdoches, Texas

Gear Grease
Litwood Oil & Supply Co., Ft. Worth, Texas
Schaeffer Bros. & Powell Mfg. Co., St. Louis, Mo.
Yuba Oil Refg. Co., Nacogdoches, Texas

Jack-Post Grease
Schaeffer Bros. & Powell Mfg. Co., St. Louis, Mo.

Non-Chatter Oil Base
Schaeffer Bros. & Powell Mfg. Co., St. Louis, Mo.

Pressure Gun Grease
Fiske Bros. Ref. Co., 24 State St., New York
Branch: 215 Pontiac St., Toledo, O.
Schaeffer Bros. & Powell Mfg. Co., St. Louis, Mo.

Sponge Grease
Schaeffer Bros. & Powell Mfg. Co., St. Louis, Mo.

Transmission Lubricant
Fiske Bros. Ref. Co., 24 State St., New York
Branch: 215 Pontiac St., Toledo, O.

Wax Distillate

PENNSYLVANIA

34-34½ Gravity
Bradford Oil Refg. Co., Bradford, Pa.

Wax

ILLINOIS

124-126 White Crude Scale
Indian Refining Company, Lawrenceville, Ill.

OKLAHOMA

124-126 White Crude Scale
Bell Oil & Gas Co., Tulsa, Okla.

PENNSYLVANIA

122-124 White Crude Scale
Butler County Oil Refg. Co., Bruin, Pa.
Emery Mfg. Co., Bradford, Pa.
Independent Refining Co., Oil City, Pa.
Kendall Refining Co., Bradford, Pa.

124-126 Crude Scale (off white)
Crystal Oil Works, Oil City, Pa.

128-130 Refined
Waverly Oil Works Co., Pittsburgh, Pa.

Fuel Oil

KENTUCKY

24-26 Fuel Oil
Ashland Refining Co., Ashland, Ky.
Great Southern Refining Co., Lexington, Ky.

28-30 Fuel Oil
Ashland Refining Co., Ashland, Ky.

30-32 Fuel Oil
Ashland Refining Co., Ashland, Ky.

34-38 Gas Oil (light)
Great Southern Refining Co., Lexington, Ky.

34-38 Gas Oil (dark)
Ashland Refining Co., Ashland, Ky.
Great Southern Refining Co., Lexington, Ky.

38-40 Gas Oil (light)
Ashland Refining Co., Ashland, Ky.

NORTH LOUISIANA

14-18 Fuel Oil
Caddo Central Oil & Refining Co., Shreveport, La.

18-22 Fuel Oil
Louisiana Oil Refg. Corp., Shreveport, La.

30-32 Gas Oil
Caddo Central Oil & Refining Co., Shreveport, La.

32-36 Gas Oil
Louisiana Oil Refg. Corp., Shreveport, La.

34-36 Gas Oil
Caddo Central Oil & Refining Co., Shreveport, La.

NORTH TEXAS

24-26 Fuel Oil
Sunshine Consolidated Oil Co., Wichita Falls, Tex.

34-38 Gas Oil (dark)
Texhoma Oil & Refg. Co., Wichita Falls, Tex.

38-40 Distillate-Prime White
Noble Oil & Gas Co., Tulsa, Okla.

OKLAHOMA

22-24 Fuel Oil
L. O. Carter Co., Tulsa, Okla.

26-30 Fuel Oil
Bolene Refining Co., Enid, Okla.

30-32 Fuel Oil
Bolene Refining Co., Enid, Okla.

32-36 Gas Oil
Bolene Refining Co., Enid, Okla.
Cameron Refg. Co., Ardmore, Okla.
L. O. Carter Co., Tulsa, Okla.
Roxana Petroleum Corp., St. Louis, Mo.

36-38 Straw Distillate
Cameron Refg. Co., Ardmore, Okla.

38-40 Straw Distillate
Bolene Refining Co., Enid, Okla.

PENNSYLVANIA

30-34 Fuel Oil
Butler County Oil Refg. Co., Bruin, Pa.
Mutual Refg. Co., Warren, Pa.

36-40 Fuel Oil
Bradford Oil Refg. Co., Bradford, Pa.
Carnegie Refg. Co., Carnegie, Pa.
Emery Mfg. Co., Bradford, Pa.
Independent Refining Co., Oil City, Pa.
Lucinda Refining Co., Lucinda, Pa.
McKean County Refining Co., Bradford, Pa.

SOUTH TEXAS

22-24 Fuel Oil
Pioneer Oil & Refg. Co., San Antonio, Texas

Road Oil

OKLAHOMA

Altitude Petroleum Co., Tulsa, Okla.

Petroleum Coke

Johnson Oil Ref. Co., 208 LaSalle, Chicago, Ill.
Kendall Oil Refining Co., Bradford, Pa.
Shreveport Prod. & Refg. Co., Shreveport, La.

LETTERS TO THE EDITOR

Editor, National Petroleum News:

In the many issues of your paper that I have read there has never anything struck me as so small, illogical and jealous as the address of W. A. McMillan (at the N. P. M. A. convention in Cleveland) covering his grudge against advertised motor oils.

Had he mentioned any one of a dozen various brands one could place his attitude, however when he condemns all of them one feels that he is all wet.

From the tenor of his words one's first impression is that he hates a big company.

It is then a crime to be big or to have ambition. Hardly so when this is what everyone is striving for—or is there some certain point of growth where one must stop? The very first point that any concern tries to get over in its advertising is that the customer may expect a fairly uniform piece of goods in all parts of the country. It seems to me that a consumer who appreciates this fact will not vary his brands in the way the hypothetical Buick driver does. It is not at all hard to get samples of nationally advertised oils in various territories and while I am not familiar with other brands I defy Mr. McMillan to show me a variance of 10 points in flash, fire or viscosity of the oil put out by my company through 107 warehouses in 13 states.

The next point that strikes me as crude in Mr. McMillan's address is the solution he offers of a blind oil under the independent emblem of a standard set of specifications but regardless of the integrity of any one of a hundred refiners. We now have in our midst a new navy or U. S. Motor gasoline but does this mean that all 437 end is of equal quality?—Yes it does—not. Also we have companies now who will duplicate the specifications and color of any one of the advertised oils at one third to one half the cost and what happens?

I have seen this oil break down absolutely in from 100 to 200 miles while the original staple brand would serve at 500. So deliver me from a flock of these manufacturers.

To my mind a refiner who is not ashamed to put his name on the drum and under a distinctive color indicates:

1—Confidence in his wares and he tells the world—

2—Business experience and a wholesale integrity to have grown—

3—Service facilities and distribution that tend to ease the consumer's mind instead of further complicating things.

Rotary International says, "He who serves best profits most," no mention being made of buying cheapest. The buying feature, of course, is a matter of individual experience and I would hate to be an oil man who admits that he couldn't buy right.

For the sake of discussion we will admit that most advertised oils are not 100 per cent Pennsylvania. However, I have never heard of one that claimed to be except for some of the smaller companies. The large concerns who especially bother Mr. McMillan are large because their policy is right and their manufacturing facilities are right and their goods are right and not because the crude was found in any one spot. I like the analogy of the hungry boy with his bread spread. He doesn't know if the butter originated via Jersey or Guernsey but he can soon tell if the manufacturer knew his stuff.

So also we know that some good oils come from cheap crude and some mighty poor ones from good crude and that is what the national advertisers are trying to put over to the public and that is also what a lot of oil jobbers should know before they set up shop. So long as blind manufacturers turn out a blind oil at a blind price and blind jobbers scramble for it so long will you have profiteering on the one hand and price cutting on the other with questionable goods all the way through. When a published price, though, is shaded with a wink Mr. Public suspects a bad odor.

Pot shots at the larger companies whether Independent or Standard have been the order of the day because the shootee has failed to respond.

Well this one gets a rise out of me personally. Sure my salary comes from one of them but—we read the same books—try to serve the same ideal and aim to make a legitimate living so why the crabbing?

J. A. Secunde

SEEMS TO BE A HORSE OF A DIFFERENT HUE

American Petroleum Institute

NEW YORK, April 23.—The headquarters of the American Petroleum Institute which, since its organization have been at 15 W. 44th st., New York City, were moved April 17 to the Postum building, 250 Park av., New York City. The new offices afforded considerably more space than the old quarters.

THE EDITORS' VIEWPOINT

Ah! The Good Old Days

THINGS were not so different in the oil business back 30 years ago. They were done on a vastly smaller scale and price levels were lower. But oil men worried then about the diminishing production of crude in Pennsylvania and speculated on the chance a wildcatter could take in going over into Ohio to drill, with crude at $1.40 a barrel.

Roy B. Francis, assistant general sales manager of the Pure Oil Co., Columbus, dug up the following oil comment from the Ohio State Journal, issue of April 14, 1895:

"The recent advance in the price of crude petroleum is having the effect to boom things in the oil fields of northwestern Ohio. The increase in prices is said to be due to the fact that the supply in the Pennsylvania fields is rapidly diminishing, while in the Ohio oil country there are thousands of acres of undeveloped territory where the fluid is supposed to exist. Oil at $1.40 a barrel is enough to make the wild cat's eyes glare, and if it remains as high as a dollar, that figure means rich returns."

The Cost of Service

AN ADVANCE in gasoline prices is taken as a challenge by newspaper editors generally that is seldom overlooked. No matter how low prices have been, when the turn finally comes and an upward movement starts the assumption seems to be that it is unjustified. Very often no direct statement is made to that end, but it is plain to see the inference in the way the story is written and the headlines over it.

Many reasons, psychological, economic and so on, have been advanced for this attitude of the public toward the oil business as reflected in newspaper discussion. A 2 cent advance in gasoline means a motorist pays at the most $10 more over a year for his fuel. The price of tires, accessories, even cars themselves can go up a great deal more than this amount without anything like the call to arms in a newspaper office that a rise in gasoline prices causes.

One big reason probably is that the average man carries in the back of his mind the thought that oil is a natural resource free in the ground to the finder and that it ought not to cost more at one time than another. It brings to mind the story of the old colored deacon who was moved to go to the city water department to remonstrate about his water bill. "How come you send me this bill for water," he asks. "Don't the gospels say water and air am free to the children of the earth?"

"Yes, it's free, uncle," said the clerk. "You can take a bucket and go down to the river and carry away as much as you like. But when we pipe it into your kitchen so that all you have to do is to turn a tap, then you have to pay for it."

Maybe the oil companies, in telling their story to the public, should point out that, not only is oil not free to the finder, but that the locating it, bringing it to the surface from nearly a mile down in the earth and making it convenient to the motorist around the corner from his house involves a tremendous expense and investment.—V. B. G.

Dealer Organizations

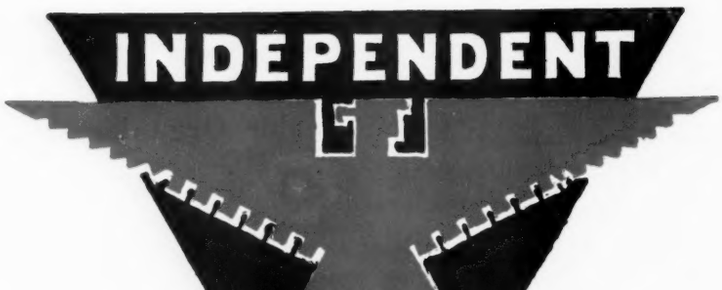
THE organization of the Independent retail gasoline dealers in various cities over the country can be taken as a reflection of the tightening competition in motor fuel sales and the realization of the fact by the large and small concerns in the business alike. We have had the single station operator, or the man who owns and runs two or three stations, buying from the tank wagons of the wholesale distributing oil companies, particularly in the east for some time. In the last two years or so this phase of the gasoline business has developed in the west. It has proved profitable where the owner does a good share of the work at the station himself and where he has the salesman's instinct for building and holding trade.

The heads of these stations realize that each alone cannot be much of a factor in the business, as compared with the sales and advertising effort of the big marketers and the Independent jobbers but that, banded together, they can exert considerable influence. If they are successful in their organization and hold together, a logical step will probably be their consideration of a plan to put in bulk storage and buy their gasoline from the refinery instead of buying from the tank wagons of the jobbers in their community.

Through co-operation these dealers can accomplish a good deal of good in bringing their members to follow good marketing practices, in doing constructive advertising and sales work, and so on. They should bear in mind, however, that the success of their members individually in selling gasoline is due to the personal attention that each gives to maintaining and building up his trade. Operating as a retail dealer only those members have a fair margin on which to carry on their gasoline business and their effort is directed to making the most out of that margin in profit to themselves through the efficient handling of their station and having the time to devote to their accessory business or whatever line they carry on in connection with that.

Going into the wholesale gasoline business on a co-operative basis has griefs that even the wholesale gasoline companies do not experience. The industry has seen many different forms of co-operative plans of both buying and selling gasoline tried and they have not resulted in success. It is "dollars to doughnuts" that these retail dealers will be farther ahead by accepting the margin the tank wagon offers them and developing their retail business to the greatest extent and as efficiently as possible except as their own individual growth warrants their branching out into bulk storage, tank wagon deliveries and so on.—V. B. G.

Warning!



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NOTE—The Independent Oil Men of America is the advertising division of the National Petroleum Marketers Association but it is a separate incorporation and any one using the Trademarked Emblem shown above must be a member of *both* organizations.

Application blanks sent on request

Independent Oil Men of America

Advertising Division National Petroleum Marketers Association

624 So. Michigan Ave.

Chicago, Ill.

Board Assumes Industry Guilty Without Facts

By W. C. Platt

Answer to Questionaire from Federal Oil Conservation Board

YOUR general letter of March 13th is in itself a striking example of what ails the oil industry and that is the assumption, without warrant of facts, by government officials and the public that whatever the oil industry is, or does, is wrong.

The Federal Oil Conservation Board seems to be to an extent on a false assumption. Possibly all the facts exist that would justify the board but neither the government or anybody else has the knowledge from which it appears to speak.

Your letter speaks from unwarranted assumption. It refers to the "rapidly diminishing reserves." Who knows they are rapidly diminishing? What are they rapidly diminishing from? Neither the government nor the oil industry knows. They have been "rapidly diminishing" for 60 years, (the while they increase) and prior to that time they did not "exist at all." Possibly, they are rapidly diminishing; but I submit there are no facts now known which would permit one in all calmness and intelligence drawing that conclusion.

Your letter says that it is "commonly held" that present production only brings forth about 20 per cent of all the oil in the sand. I know of no common belief to that effect, although some geologists have expressed that opinion.

You speak of "extensive duplication" of marketing facilities. How do you know there is duplication and how do you know it is extensive? Many people have said that, but that doesn't make it true. Should you, a government organization, make any such assumption unless you have the facts? What facts this paper has been able to gather do not support any such assumption.

Again you ask "how can the oil industry and the public be brought to realize their respective responsibilities and to formulate policies on their conduct with due regard to the general welfare?" How do you know that the industry is not so doing now? This sounds like an attempt to indict the oil industry.

I hasten to say that I honor the Conservation Board, the purpose of its organization and welcome its investigation of the oil industry. My inquiries at the start of this letter are to be taken as indicating as strikingly as I can what I think is the greatest handicap that the oil industry has to overcome.

Everybody Condemns Industry; Few Understand It

Everybody speaks of and generally condemns the oil industry with a finality of a judge and yet few know about it.

The greatest thing that your board can accomplish is a conservation of the government's thought and action with regard to the oil industry, to bring about a conservation of the public's thought and action with regard to the same and to establish a realization that this intelligence is coming true in the minds of the oil men and thus to bring about a real co-operation between all three, all of which will go far to solve, I believe, all the problems that your letter indicates you fear exist.

Out of this investigation should come a realization on the part of the government and on the part of the public that government officials have been negligent in their duties and their responsibilities to the oil industry. It should serve to bring home to government officials that they must be courageous as regards even the oil men, because the oil men being citizens of this country and having their business here, are just as much entitled to the government's favorable attention as are the farmers or any other business. The government has long looked helpfully on the farmers' trouble, the cotton planters' difficulty, and those in many other lines of business, but where is the government official who has done the same as regards oil? The only government men I know of who have, are a few employees in a couple of departments, who, by their own admirable technical work with the oil industry, know what it is and know what the oil men are. But no higher government officials, and particularly no members of congress, have given heed to what these men have to say.

Conceive, if you can, anyone attacking the farmers of the country with the mass of mis-information, false statements and so on that many men in public life have hurled at the oil industry. The highest officials in the federal government would immediately see that the facts, as the government found them, were stated to the general public. But these same higher officials are silent when it comes to the oil industry, though the government's files are full of facts to controvert these lies.

I'm hopeful that this conservation investigation will bring home to these higher government officials their duty towards the oil industry, which means their duty towards the general public and their duty towards their own jobs. If they exercise their duty, the problems of the industry, as they come to pass, will be handled intelligently and sanely and to the public's benefit.

Taking your letter in detail.

1. While I admit our knowledge of petroleum geology has increased tremendously from nothing to its present proportion in the 60 years that the industry has operated, nevertheless, I can't help but recall reports that prior to the discovery of oil it was thought there was no oil in this country and immediately on its discovery we were faced always with an "imminent shortage of petroleum." While the supply of oil in the earth must some day be exhausted, nevertheless, I question the extent of anybody's knowledge as permitting them to say when that exhaustion may take place. Experience would indicate that we need not consider it for a great many years.

2. That shortage will be put off indefinitely by a more efficient production of oil, more efficient transportation and refining and marketing of oil and particularly a more efficient use of oil. By saying that the oil industry will operate more efficiently, I do not mean to imply any criticism of its present methods, as all methods in all lines of work are being constantly improved and they will be improved in the oil industry. The oil industry is operating efficiently today to the best of expert knowledge, but tomorrow the industry's knowledge will be greater.

Substitutes will undoubtedly come into use from oil shale and coal and it is entirely possible that some ingenious chemist may devise even an absolutely synthetic petroleum product. But really the greatest conservation will be in its use and in this I'm only voicing the opinions of some of the best automobile engineers, who claim that whenever the public gets ready to put up with the bother of shifting gears and riding in something less than the locomotive that hauls the twentieth-century-limited, then it will get real efficiency from its motor fuel.

I question if we need worry about the export of petroleum products in view of the aggressiveness of both foreign and domestic oil companies in exploring foreign territories. We have been importing a great deal of oil as it is and we are going to import a great deal more as years go on.

3. If the heating and steam generating markets were not developed for fuel oil, then that fuel oil would have to be put in storage at tremendous expense because nobody would know how long it would have to stay in storage or how much it would cost to take it out of storage to make it into whatever product the public would require 10, 20 or 100 years hence, or longer. These particular markets are developed, speaking of them generally, only for

what might be called by-products of crude. The industry has been cursed with much loose talk by would-be economists and conservationists about the alleged "terrible waste" of burning oil. That talk has not come from sound thinking. The fuel oil has had to be either burned or stored. Who could or would store it?

4. No. there are not too many links in the chain from the producer to the consumer. You could not distribute petroleum products with any less. Every link is performing a necessary service. The producer could not sell his crude in the raw state direct to the marketer, it must go thru the refinery, so you've got to have the refinery. The refiner could not sell his stuff direct to the consumer, because the consumer cannot handle it in tank-car lots, so it must go to the marketer, who puts it into tank wagons, barrels and cans and sells it to the consumer. I question if there's a commodity which moves as directly from its source to the ultimate consumer as a petroleum product and I question if there is one that moves as efficiently and at as small a cost.

Ownership Immaterial if Service is Rendered

It is immaterial how these several links are owned so long as the service is rendered. The service would have to be rendered efficiently or the man giving it would be out of business. Personally, I'm a great believer in individual ownership of each link. I think it operates more efficiently than big company ownership. From what I've heard, I believe big companies make their profit not so much on the efficiency of their operation of any one part of the business, but from being able to equalize losses in one with profits in another division of the industry and being able to profit from turning stocks and so forth.

But I believe that the individually owned oil well, the individually owned refinery, the individually owned marketing station are all efficient friends of the public and that the public would suffer materially if they were to be owned differently.

There are always too many people in a business so far as those who are already in that business are concerned. Also there is not a line of business in the world that isn't over-equipped, as the economist sees it. From a high-brow economic standpoint, we've got too many of everything—too many kings, too many countries, too many people, too many manufacturers, too many churches, too many gods, too many peanut-stands,—there isn't a thing in the world that we haven't got too many of, yet it is the way the world is built. Why try and revolutionize the world and start with the oil industry?

In talking about the alleged duplication of marketing equipment we overlook entirely the size of the growth of automobiles and hence the growth necessary in the oil industry. I have some interesting figures on Ohio which pertain to that growth and the alleged duplication of equipment.

Take a glance back over 12 years, and in 1912, Ohio had 63,000 automobiles and at the end of 1924 it had 1,244,000 automobiles, an increase of nearly 1900 per cent.

Then consider the oil industry's growth. In 1912 there was a Standard Oil Co. and 19 other oil companies known as Independents. That is, all told, there were only 20 oil companies doing business in Ohio, big and little, good, bad and indifferent. In 1924 there was still the Standard Oil Co. but 433 others—an increase of 2100 per cent in 11 years and it is probably higher now as the 1924 figures were for the forepart of the year. But note the percentage of increase is pretty close to the increase in automobiles.

Bear in mind that while there has been an increase in the automobile business there has been a tremendous increase in the other consumers of petroleum products and they, too, call for marketing facilities. But crediting all the increase to the automobile business, one still can't criticize the growth of the oil industry in Ohio under the circumstances.

This growth has been conservative as to the equipment used by the companies. For illustration, in 1912 the Standard Oil Co. had 218 bulk stations and by 1923 it had 310, or an increase of 42 per cent. Of course, out of that small increase it was doing a much greater business, due to having expanded its facilities at those stations. In 1912 the Standard stations had already been well located over the state because of its reliance upon general distribution of kerosene from the old oil lamp days.

In those same 11 years the Independents increased from 37 bulk stations in the state to 660, or 1700 per cent which I submit is in line with the 1900 per cent increase of automobiles.

In tank wagons, the Standard Oil Co. increased from 390 tank wagons in 1912 to 751 in 1923, or 93 per cent. That certainly shows that as the automobile market developed, the Standard increased the efficiency of its tank wagons and tank trucks. It increased this efficiency by increasing the size of the tanks, but particularly by getting a greater use of the equipment. In the same time the Independents increased their tank wagons and trucks from 73 to 1028, or an increase of 1300 per cent.

Percentage figures are not always fair, but nevertheless, they can indicate something. Do not these figures show reasonable growth in the oil industry? And its growth here in Ohio is a fair sample of its growth all over the country.

Gallonage Great Enough to Justify Present Stations

But let's look at it from a gallonage standpoint, and consider these filling stations that you condemn in your letter of inquiry. One big oil company has made a careful investigation of the amount of gasoline that a certain number of thousands of passenger cars use and has arrived at a figure of 294 gallons per car per year. It has done the same for trucks and has arrived at a much higher figure, two figures in fact, one for heavy duty and the other for lighter trucks. The number of drive-in service stations in Ohio at the present time is 2993—divided, 493 to the Standard Oil Co. and 2500 to Independents. You have then 357 passenger cars per drive-in station in Ohio at the close of 1924 and 53 trucks per station—taking a factor of 300 gallons per passenger car per year, you have 107,000 gallons per filling station per year for passenger cars alone. But not all the gasoline business goes through filling stations. In the cities, most of it does,—in the country, a much smaller percentage. Oil men have told me that 75 per cent of the total gasoline business for filling stations was high enough. That gives you a total of 77,000 gallons per year per automobile drive-in filling station from passenger cars alone. If you want to include the truck gallonage at 1500 gallons per truck per year and say allow for half of the trucks taking gasoline from service stations, which may be high enough, you will add 14,000 gallons a year to this 77,000 gallons, or a total of 91,000 gallons. Any oil man will tell you that this is an excellent gallonage. You can cut these figures and still have a good gallonage, per station.

Unfortunately, this is not true for all stations. Some stations do more and some do less. Some stations are well located, some are not.

You can argue that fewer stations would still take care of the cars, but it is a question if your expense would be reduced proportionately and it is also a question how pleased the public would be. There is still the bigger question of whether or not materially fewer stations could handle the peak load. L. V. Nicholas, president of the National Petroleum Marketers' Association at Chicago in his answer to your questions has brought out the idea of this peak load at filling stations. Few oil men, I believe, have given much thought to it. There is a peak load. There are times of the day when people like to buy gasoline and there are times when they don't. It is just as essential for the oil companies to be able to handle this peak load as it is for the traction companies or the gas companies or the electric light companies or for the restaurants.

In addition to service stations, the industry has a great many gasoline curbstone pumps out. Undoubtedly some of them are poorly located.

But can any industry or business be developed without some mistakes? Everywhere we look we see unused

Splitting Hairs

GASOLINE—
Uniform, clean and spunky.

KEROSENE—
Pure, sweet and water white.

Motor and Tractor Oils
Steam Cylinder Oils
Engine and Dynamo Oils
Refrigerating Oils
Diesel Oils
Turbine Oils
Neutrals
Bright Stocks
Cylinder Stocks
Fuel Oils
Wax
Grease

Lubrication for every purpose

Distilled—filtered—blended—tested and re-tested—

Deviations from standards are not permitted in our laboratories, for it is our belief that oils should be built to meet exacting demands.

Perhaps we do split hairs.

Such extreme care may be unnecessary, but the satisfaction of knowing that all Marathon Oils have gained and continue to hold the confidence of plant engineers everywhere justifies the added effort and expense.

There is a Marathon Oil for every lubrication problem. May we prescribe for you or for your customer?

MARATHON
LUBRICANTS

TRANSCONTINENTAL OIL COMPANY

Executive Offices:
Benedum-Trees Building, Pittsburgh, Pa.

Sales Offices:
Atlanta, Chicago, Des Moines, Fort Worth, Muskogee, Okla., New York, Pittsburgh, Sioux City and Tulsa

Refineries:
Boynton, Bristow, Fort Worth

Warehouses at convenient shipping points.

property and equipment of all kinds, unused storerooms, and right after a period of boom prices, unused apartment houses, and unused private dwellings, unused churches, unused factories. There is a certain amount of error and hence waste in developing all of life's activities.

Public Does Not Pay for Station Duplication

But let us assume, for the sake of the argument, that there is "extensive duplication" of marketing facilities—who pays for it? The unthinking say the public, but the public doesn't. The more stations there are, the more people there are competing for business—the keener the competition, the lower the price, and that is true even in oil business, although some government people refuse to recognize it. With keen competition there is a point below which a man cannot go in price and in volume of business, and make a profit. When he ceases to make a profit, he has to quit the business and what does he lose—he loses his and other people's savings. If he has built the one unnecessary filling station in his town or the thousand unnecessary filling stations in his state, it doesn't add one single penny to the cost of the commodity to the public. So long as this man lives he keeps hammering down the price in desperation to try and get some business out of which he hopes to make a profit. But when he finally loses, he loses his own investment. At no point has he added one single penny to the price that the public pays. The public isn't paying for all these gasoline pumps and filling stations whether they are losing money or making money, but those who come into the oil industry with their savings and the savings of the others, are paying, while the public is paying less and less for its gasoline due to the competition.

So many of the critics of the oil industry have a Russianized viewpoint and that is the viewpoint indicated by your question here. People forget that this is America dedicated as being the land of the free, not only in personal conduct, but in competitive action. There is nothing that can be done about two pumps more than possibly the oil industry ought to have, or two pumps less, except the policy of this country be changed and a policy of Sovietism as in Russia is adopted. You can't regulate the oil industry about having two more pumps without going after the churches, the doctors, the lawyers, stores, farmers and every line of activity, in other words, changing the whole country.

But if you look at the oil industry without bias, I believe you will find that it has been a typical American industry with much competition and with great freedom of competition in the last 12 or 15 years.

The last few sentences of the foregoing apply also to your question No. 5 as to the possibilities of so controlling production of crude oil as to control the market price. To both 5 and 6, I would say, that I know of no scheme which can bring about practicable control of the industry, except one of education and exact knowledge by the oil men of the conditions of the business. I have looked into all schemes that have been suggested so far and have yet to find one that I think would work out. If the government were to assume the power of saying when and how a well or a field should be brought in, and 1 question if the government can under the laws, the whole country would be in a terrible turmoil. If crude was selling at $3.00 a barrel and a big field was in sight which might reduce the price of crude to 30 cents a barrel, as it has in years past, unless one took a club and went out and killed all the La Follettes and the rest of the radicals, the government would have a hard time in deciding on the issuing of the permits according to justice and common sense.

Under our form of government, I don't expect we ever will find a full 100 per cent intelligence or philanthropy or patriotism in congress. The possibilities of saving a few cents on the price of gasoline by bringing in a field are too tempting not to attract the attention of the politically inclined. The congress is always spending somebody else's money. In everything that it has undertaken, it has spent too much money undoubtedly. How easy it would be therefore to spend the money of the oil industry so as to provide the public with cheaper gasoline. But if it were done, wouldn't it be natural to expect the oil industry to demand that the same policy be pursued as regards other lines of business?

But what is the matter with the present system? People say it is wasteful. How wasteful? Who knows? Where are the facts? They see a little oil slopped over the floor of the derrick, but if you look on a jeweler's bench you will find a little gold dust from his filing. But it is not waste. Five years from now there may be less oil slopped on the derrick floor by a couple of quarts, but even if so, you can't say that the gallon that is on there today is waste. A gallon may be too large, or too small a measure of that slop, but it is a fair illustration of its relative importance against the total production of oil.

There is No Avoidable Waste in Handling Oil

There is no avoidable waste. There is often times a waste of an individual operator's savings in trying to handle a big well—there's a waste of his investment in the well if he's got to sell the output of it below cost—there's a waste of the investment of other operators in other wells, but there is no waste in the crude oil itself that is worthy of the hallabaloo that is kicked up about it.

The greatest service which the government can render the oil industry is to help supply it with accurate information as to what the industry is and what it is doing and to help bring it to a realization of the operation of economic forces in the oil industry. The ideal would be that every morning at 9:00 o'clock every oil man the country over would have on his desk a complete statement of the oil produced in the country the day before, the oil used, the oil put into storage, the oil shipped out or in, the prices thereof, and the same information for all petroleum products. In other words, to have everything about the oil industry on his desk at 9:00—then he would know that if he added a million barrels here or took off a million barrels there, what the effect would be on price and the conduct of his associates in the industry within 24 hours.

But the government in its statistical service to the oil industry is far, far behind any such ideal and it is far behind what it can do if it only would bestir itself. The government should consolidate the gathering and issuing of all its figures on petroleum under one head and have that done efficiently and quickly and not dragged over weeks and months as at present. If the government devoted 10 per cent of the attention to oil statistics that it does to the agricultural field, the oil industry would have nothing to complain of in the statistical service. What speeding up there has been of oil statistics has not been due to any government action, but has been due solely to the oil interests, largely thru the American Petroleum Institute and other associations. If the oil industry had left it to the government, we still would be getting our statistics only on the yearly basis and then six months to a year or a year and a half late. I wonder if there is any other business that has been left so much in the dark by the government and it be a business of such importance to the public as the oil industry?

Exact and immediate information on the oil situation would permit the oil man to act intelligently. It might take him time to learn how to act with this information. He has only had samples of this information in the last few years and those samples have come largely from private sources. These private sources will continue to improve the character of the service they are rendering on statistic and as the oil man continues to use that information, he will learn how to use it better and better.

With exact and immediate statistics on all the activities of the oil industry, it will be possible then to make every producer realize that when he brings in too much oil against the markets of this country and against the markets of the world, the price is going to fall. Even at the present time, many a producer has no conception of how he and his output fit into the market of

this country or the world. He does not see the relation between his few barrels and the barrels of his thousands and thousands of associates. The refiner has not been quite so much in the dark as the producer, but his vision has been dim. The marketer, being by the necessities of his business a buyer, has had a keener realization of the operation of the law of supply and demand, but even he has been foggy in his thoughts. This ignorance has been true of so-called big men in the industry, as well as small men.

The Greatest Service of the Institute

I think one of the greatest services which R. L. Welch, secretary and general counsel of the American Petroleum Institute has rendered the oil industry is to make it begin to realize that there is a law of supply and demand and that it has had something to do with the oil industry. He has done this by hard work in gathering and perfecting statistics which the government had been sleeping over for years and by presenting those statistics correctly so that the oil industry could see that the price went down because there was too much oil and that the price went up because there was not enough oil.

But we still must make the public see this, because it's the public that comes into the oil business as a producer or as a refiner or as a marketer and ignores entirely any thought of the operation of the law of supply and demand. The public, with the money of tens of thousands of people, drills a well and thinks it is entitled to the highest price then being paid for the oil, no matter how much oil the oil companies had to put in storage by reason of the public drilling that well. That same public goes into the refining business, as it has in hundreds of plants the country over, and manufactures gasoline for a market which was at one level when it started building its plant, but at another level when the plant was operating, and yet this public thinks that it is being discriminated against and that the price should stay up—that somebody ought to put a clothes-pole under it and keep it there. The same thing is true in the marketing end of the business. It's surprising how heedlessly and thoughtlessly the public rushes in without any thought at all of the operation of the law of supply and demand.

But the oil industry has not been alone in this ignorance. Many in high places of government have had the same ignorance, or at least seemingly have.

But the dispelling of this ignorance is a function that primarily belongs to the government and when it is dispelled, there will be still greater efficiency of operation in the oil business.

This answers your question No. 7 which wants to know how the public and the oil industry can be brought to a clearer realization of their responsibilities. I think the question is pretty much an insult to the oil industry. Any inquiry or survey of the industry's papers would have informed you that the oil industry does realize the responsibility, but it's the public that does not realize its responsibility to the oil industry and to the products made. It's the public that is a waster of this product. It's the public that slops the gasoline around which runs with a too rich mixture—which keeps its car idling when it could be turned off. Here again I'm speaking without having all the facts that I've criticized you for not having, nevertheless, from what few facts I've gathered above observation and by multiplying those facts by the 18 million cars in this country, I wouldn't be much surprised that the public wastes in the most futile way more petroleum products of a far higher value than the oil industry does in handling the whole petroleum output of this country.

As to No. 8 and what the government might do for its oil companies in foreign operation,—the government should treat the oil industry and individual oil companies fairly and honestly at home. If they must be prosecuted, go ahead and prosecute those that ought to be, but if it is not going to prosecute them, then shut up about it. Don't keep falsely advertising them. I hold no brief for the Standard Oil Co. I believe it deserved the prosecution and all it got in the government's attack in past years which ended with the dissolution decree. But since then the government has made just enough idle moves against the Standard Oil companies and other big companies in the oil industry in general so as to permit the foreign competitors of American oil companies to use the publicity on those moves to justify reiterating the old stuff in the dissolution suit to the detriment of the whole American oil industry.

Some Day Will Doubtless Need Foreign Oil

The government must not overlook the fact that the day may come when no matter how we conserve American oil, our demand will be such that we will need oil from abroad, in fact, I think we have needed it right along since we've been taking it from Mexico. If the government wants the foreign fields developed economically and at least possible cost by American oil companies, then the government should cooperate with those companies in getting to those fields and bringing the oil to this country. At the present time the government is doing much to make the cost of foreign exploration and importation of oil the greater. The consumer will pay the bill.

Take for instance just this one point. If you and your associates had land in South America or Africa or Asia and read in the newspapers all the publicity that has been put out in regard to this Federal Oil Conservation Board and all the statements that have been made by a number of government employees and others on the alleged shortage or probable shortage of oil in this country, and if while you held that land an American oil company came down to buy it or lease it from you, would you ask a less price for the right to drill on that land of this American oil company because of all these reports that America was soon going to be hard up as Sam Hill for oil? Would you say to yourself, here's a great country that has generously shipped its products to other countries, even to our country, and now they are about to need oil and we're going to let them get it as cheaply as possible? No, indeed. You would say, here's a company that's hard up for something and they've got a lot of money and even their own country which doesn't love them, has a lot of money, and we can get a good price out of them. The more they need this oil, the higher the price we can ask, and you would ask the very highest price that you thought you could get away with.

So even while developing this Federal Oil Conservation Board, the U. S. Government has undoubtedly lent the greatest possible aid to the owners of all possible foreign oil lands and for all I know, the ultimate cost to the people of this country may run into millions or hundreds of millions of dollars over what it might if our government had used intelligence. If I were a La Follette or a McMaster I would make it even billions of dollars.

I know of no specific thing that the government can do on foreign operation except to be helpful, except to see that all foreign representatives of the government are of helpful mind, except to tell any bolsheviks who rise up at home and talk about the alleged hard dollar policy of this government and its oil dollar policy, just where to get off at. There's been too much running away from the mob down there at Washington up until the recent past. It's now time to stop that mob and it can be stopped with a few hard facts.

What the oil industry needs in Washington and it needs it on behalf of its own efficient operation and on behalf of a reasonable price to the public, are men of courage and of intelligence, men who know when they haven't got the facts and who are willing to work until they get the facts, men who when they do get those facts, are willing to see exactly what they mean and interpret just what they mean to the best interests of this country.

What the industry needs in Washington and what the public needs in Washington are men of intelligence, courage and honesty—not cheats, nor liars, nor political nor economic crooks.

And I think the new day has dawned. Your board and its inquiries are most welcome.

LEAVES FROM THE

Mr. Ralph C. Haynes, Sales Mgr.

Dear Mr. Haynes:-

The things we say about Triplexd personally and in our advertising might seem extravagant, if we didn't back up every word of it with the most conclusive evidence of good faith ever offered by a manufacturer of gasoline pump hose---the Two year Service Insurance Policy.

Our salesmen tell a prospective purchaser that if he buys Triplexd gasoline pump hose he won't have any maintenance or replacements to pay for for two solid years, and he may say to himself, "bunk"

But when you flash the Policy on him, and show him that each length of Triplexd gasoline pump hose he buys is insured for two years, he can no longer refuse to believe. The evidence is before him---plainly and unequivocally stated.

Don't let any of the boys be afraid to tell the truth about Triplexd, no matter how incredible it may seem to the buyer. Have them carry the Policy wherever they go--- it not only insures the purchaser against replacement costs, but it insures us against the charge of exaggeration.

Cordially yours,

J. M. Oden

President and General Manager.

TRIPLEXD SALES OFFICES

CALIFORNIA

LOS ANGELES: Shields, Harper & Co., 1429 South Los Angeles St.

SAN FRANCISCO: Shields, Harper & Co., 558 Howard Street

COLORADO

DENVER: Eaton Metal Products Co., 4800 York Street

FLORIDA

JACKSONVILLE: Dixie Culvert & Metal Co.

GEORGIA

ATLANTA: Dixie Culvert & Metal Co.

ILLINOIS

CHICAGO: Amco Sales Corporation, 644 W. Washington Blvd.

MISSOURI

KANSAS CITY: Butler Manufacturing Co., 1324 Grand Avenue

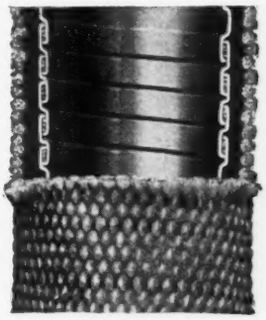
ST. LOUIS: Metal Hose & Tubing Co., Inc., 1621 Pine Street

TRIPLEXD SALES BOOK

FACTS ABOUT TRIPLEXD

"X"
Flexible Metal Lining
(First Stage)

"XX"
Rubber Cover Added
(Second Stage)



"XXX"
Woven Fabric Casing Added
(TRIPLEXD Complete)

The single "X" in Triplexd is tested metal tubing. (Please note that we are the only gasoline makers to test the tubing). All tubing used in making Triplexd is placed in a Tinius Olsen testing machine to find its breaking point before being approved.

The double "X" is special formula rubber produced in our own mills and laid over the metal tubing.

The triple "X" is the fabric covering woven under pressure over the soft uncured rubber on four-bobbin looms, and made an inseparable part of the hose by steam vulcanization.

Hence the name "Triplexd" —the only insured gasoline pump hose on the market.

TRIPLEXD
Insured GASOLINE HOSE

TRIPLEXD SALES OFFICES

MINNESOTA
MINNEAPOLIS: Butler Manufacturing Co., 900-914 Sixth Ave., S. E.

NEW YORK
BROOKLYN: Metal Hose & Tubing Co., Inc., 236 Tillary Street

OHIO
CLEVELAND: Consumers Rubber Co., 1302 Ontario Street, N.

PENNSYLVANIA
PITTSBURG: Rutledge Equipment Co., 1741 Oliver Building

TEXAS
HOUSTON: Peden Iron & Steel Co., 700 N. San Jacinto Street

SAN ANTONIO: Peden Iron & Steel Co., 1401 South Flores Street

CANADA
TORONTO, ONT.: Dunlop Tire & Rubber Goods Co., Ltd.

ENGLAND
LONDON: J. Bazley-White Jr. 3 Love Lane, Eastcheap, E. C. 3

Shows Character, Capital and Capacity to Succeed are Credit Factors

Staff Special

CLEVELAND, April 24

TAKING of orders is really only the first consideration in the making of a sale; which is not completed so far as the seller is concerned until the money is collected. A company may take an infinite number of orders yet have a seriously unprofitable business. An intelligent extension of credit in the right place, is the weight which swings the balance from probable losses to reasonably sure profits.

That is the substance of what M. A. Brewster, treasurer of the Pennzoil Co., Oil City, Pa., recently told an assemblage of that company's salesmen. Mr. Brewster enumerated the fundamentals concerning which salesmen should be on the lookout in recommending the extension of credit, and discussed the relation of each element entering into a credit transaction to another. He said in part:

"Speaking of taking orders and losing profits, I believe the item of credits comes closest to this. It has been said that credits are made up of four big C's, namely, Character, Capital, Capacity and Collateral.

Three Chief Elements

"I do not believe that we want to discuss the fourth of these today as this bears largely on collateral for loans. Credit is based on the three elements:

"First, the character of the interested parties, implying their willingness to pay their accounts whenever possible as signified by their moral principles, habits, antecedents, and reputation.

"Second. Their capital as shown by their available resources and liabilities as set forth in a financial statement.

"Third. Their capacity or ability to succeed as manifested by their record of business experience, their skill manifested in overcoming business difficulties, and their mental, moral, and physical fitness for conducting the business in which they are engaged.

"Let us examine and discuss each of these items and later consider their relation one to another.

Loan Upon Character

"Several years ago the late J. P. Morgan was called to testify at an investigation of economical conditions, and, during the course of the examination, he was asked regarding a loan of a million dollars which had been made to a certain party. When asked upon what security this loan was made, he replied 'Upon no security as he had none to put up, but merely upon the strength of his character.' This concrete example serves to illustrate how important one's character is when considering credit, for it can be safely assumed that any man of good character will pay his bills if it is possible. In other words, the moral risk is reduced to a minimum or, as it is sometimes said, 'Collateral cannot take the place of character.'

"Just what is meant by character in connection with credit? It means one's willingness and inclination to pay his bills which, in turn, is significant of the fact and based on the soundness of his moral principles and personal actions. It will, therefore, be observed that it is more important than capital, for no matter how much capital a man may have, if he does not have character and starts out to beat his creditors, you can see where he will go.

Other Security Needed

"We have observed the importance of character but were a business man or business organization to practice the extending of credit merely upon character, I am quite sure he would find himself saying 'Good morning,' to the referee in bankruptcy. Hence, the further necessity of considering the probability that he will be able to pay his bills when they become due, or in other words, considering the amount of his available working capital. The amount of actual capital invested in a business is not so important. It is the manner in which he handles his capital, or I might say, just as a good housekeeper runs a house on what a poor one wastes so may a man of small capital, but of good business judgment, arrange his business and manage his finances so that, with small capital and foresight, he is a better risk than one with large capital and not so well situated otherwise.

"By capacity, we mean, is he a good business man, has he the necessary equipment, mental and physical, and is he qualified as to age, experience, health, education, and initiative, In other words, measured by his personal efforts, does he demonstrate his ability to successfully carry on and manage his business? There is certainly an element of truth in the saying, 'A fool, though honest, and his money are soon parted,' which is another way of saying one must have ability to make a success in business.

Ability to Succeed

"Ability is reflected to the extent that a business man adopts and carries on his business in a business like way by keeping his records in good condition and by his skill in overcoming the difficulties which he may confront. This may be contrasted to the slipshod manner in which some business men conduct their business—they do not keep records, they do not know from month to month what they are doing or where they are going. It is also necessary that they have initiative and keep abreast of the times.

"It seems strange if a business man had all three of these elements—character, capacity, and ability, that he should ever fail, however, we all know that such has been the case, but nevertheless with these three elements, the risk is reduced to a minimum.

"The best combination, as you have taken from what I have said, is Character plus Capital plus Capacity, which equals unlimited credit.

Character Plus Capacity

"The next best combination is Character plus Capacity, and if a man has these, and he is extended credit in the form of products, he has all three elements and, therefore, I might say that with character and capacity, a man would be entitled to reasonable credit. But no matter what capital and ability one may have, he cannot expect credit if he does not have character, and where either character or ability are absent, the risk would be hazardous.

"When interviewing customers, I wonder if you salesmen ever ask yourself the question, 'Am I giving the general office all the information I can regarding the customer?'

"One peculiar condition seems to exist. Some salesmen, I believe, seem to have the idea that if they get a note the account is paid. However, experience has taught us that in a good many cases the note is not worth any more than the open account.

Dual Responsibility

"In regard to the credit man, I want to say that he has a dual responsibility. If he turns down an account, an order, or if he goes after the customer too hard on collections, the salesmen think he is killing their business. He is also responsible to the heads of the organization to see that the accounts are paid, because you all know that you cannot conduct a business if you do not collect your accounts. Further, I want to impress upon you the fact that it is not alone your record of sales that makes your standing, but it is the profits that count. It doesn't give you any standing if you make all kinds of sales and lose accounts which take all the profit you made on what were collected.

"In conclusion, you all probably know and have often heard a certain parable quoted from scripture. However, I am not here preaching a sermon, but I do have a thought in mind. When you men are out taking orders and interviewing your customers, I want you to carry this with you and think it over often and ask yourself this question, 'What does it profit me to take an order and have my employer lose the value of the sale by not being able to collect the account?' "

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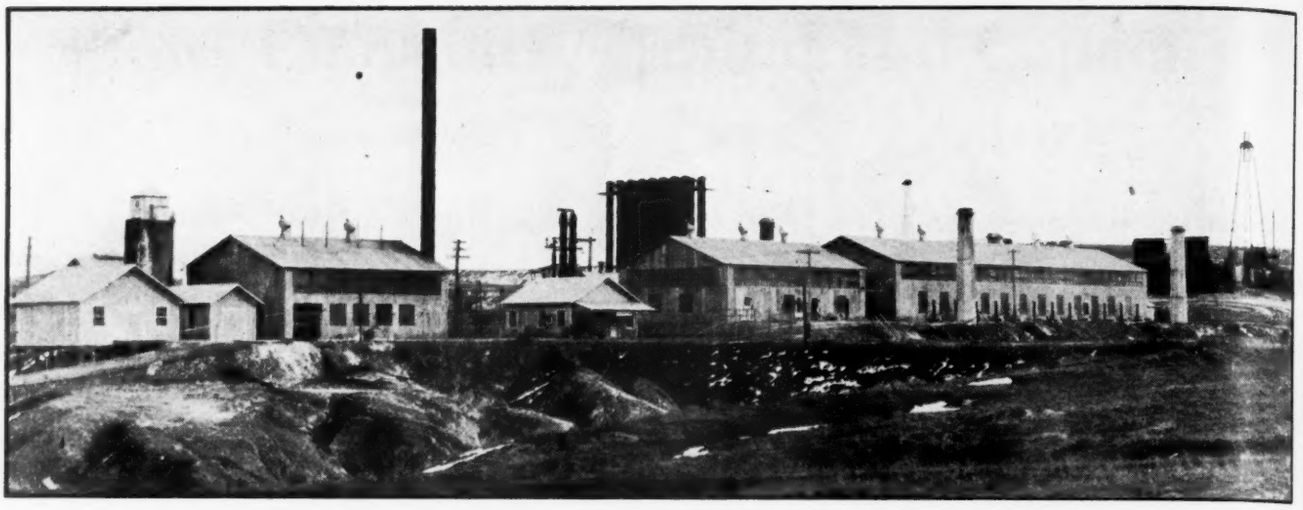

Ohio Oil Co.'s compression and absorption plant in Salt Creek field

Wyoming Badly in Need of New Field as Refinery Situation Shows

By Lawrence E. Smith
N. P. N. STAFF WRITER

CASPER, WYO., April 25

A YEAR ago—in February, 1924 to be exact, Wyoming produced 3,782,924 barrels of crude petroleum. The past February, total production was 2,225,872 barrels.

A year ago, Salt Creek turned out in February a total of 3,064,762 barrels of oil and during the past February it was responsible for 1,667,198 barrels. It declined within that year from a daily average of 105,000 barrels to a daily average of 59,542 barrels, actual production.

The only offsetting factor in this statement is that, in the process of converting the field from one of flowing wells to one of pumpers, not all the wells have been put on production yet. As this is done, the production will be gradually increased, although even with the new drilling of this year, many are of the opinion that the close of the year will find the field on a daily average output somewhat lower than the present.

In making this assertion the deeper sand in the field, producing in three wells thus far, is given consideration and a higher rating is not assigned for the reason that it now appears that the productive territory embraced in this sand is all controlled by companies whose operations are conducted by the Midwest Refining Co. and the present disposition is to hold it as a reserve. Of course, a campaign of considerable scope in drilling this sand would boost the output materially.

The figures cited serve to show the present condition of the territory. The situation, viewed from the basis of capital investments in the territory, is serious—even alarming. Wyoming needs a new field of considerable proportion and it is not in sight. Last year's wildcatting campaign, pursued with some diligence, although the bulk of the play was in Colorado, was virtually a 100 per cent failure. About all that was uncovered was gas in localities where there is no market for it.

Said one of the operators the other day. "I am after a half million dollar appropriation from my people to drill a few wildcats in Wyoming this year."

Then, in the next breath, "But if I get it, I'm damned if I know where to go to spend it."

There is the thought in the minds of most. Where shall we look for another Wyoming pool? Structures which can be worked out readily on surface dips have been mapped in plenitude and drilled and the best of them have either been brought in for fields of some sort or have been "shot." The latter class has predominated in the past three or four years. Teapot was the last big play and the best looking. Its big day has passed unless the lower sands—those under the Wall Creek series—are found productive.

Few are now treating the matter lightly. There is no really adequate reason why Salt Creek should be the only major field in Wyoming, but it so stands to the present day. What is really the job now is that of trying to find structures which are not visible on the surface; buried domes, covered with mantles of material which give no clue to the position of underlying rock beds. That is done by either taking a long chance and putting down the wildest kind of tests or core drilling for structural evidence. Quite a little of the former has been done without result but the core drill has not been worked yet. The day is here when it must be.

With Salt Creek's big day behind her and the other fields almost all on a strictly production basis—with little new drilling to be done—the situation swings around to the refiners' angle of approach. The competition for a new barrel of oil

(Continued on page 76)

21% of Wyoming Storage Capacity Unused.

Company	Total Capacity at Present	Oil in Storage March 1	Available Room
Central Pipe Line	110,000	37,931	72,069
White Eagle O. & R.	110,000	23,812	86,188
Texas Co.	1,360,000	247,397	1,085,603
Western Pipe Line Co.	110,000	4,249	105,751
Sinclair C. O. P.	13,360,000	12,707,939	652,061
Midwest Refining and Standard of Indiana	14,729,500	11,684,270	3,045,230
Continental Oil Co.	1,180,000	809,968	370,032
Ohio Oil Co.	1,055,000	803,248	251,752
Prairie O. & G.	582,500	355,369	227,131
Producers & Refiners	1,250,000	294,989	955,011
Illinois Pipe Line	487,500	310,029	177,471
Sinclair Pipe Line	238,000	145,100	92,900
Sinclair Wyoming Oil Co.	80,000*	78,566	1,434
Independent Oil Buying Co.	10,000	None	10,000
Totals	34,662,500	27,529,867	7,132,633

*Sinclair Wyoming has turned its tank of crude and production on its Salt Creek lease to The Texas Co. at Mid-Continent price in exchange for West Columbia, Texas, crude traded by The Texas Co. and run to Sinclair plant at Houston.

A SAFETY FACTOR OF EIGHT

THE rugged strength enabling Sterling Oil 14-Ft. and 19½-Ft. Sections to resist mechanical injuries and withstand excessive pressures has been so often proved that it is now recognized by the industry as simply one more reason for installing Sterling Sections.

Sterling Sections are intended for use at any working pressure up to 150 lbs., vapor or liquid. Each is tested to 100 lbs. hydrostatic pressure and carefully inspected before shipment. For working pressures in excess of 50 lbs., tests will be made to 400 lbs. hydrostatic pressure.

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Sterling Oil Sections are immediately available at our plants in
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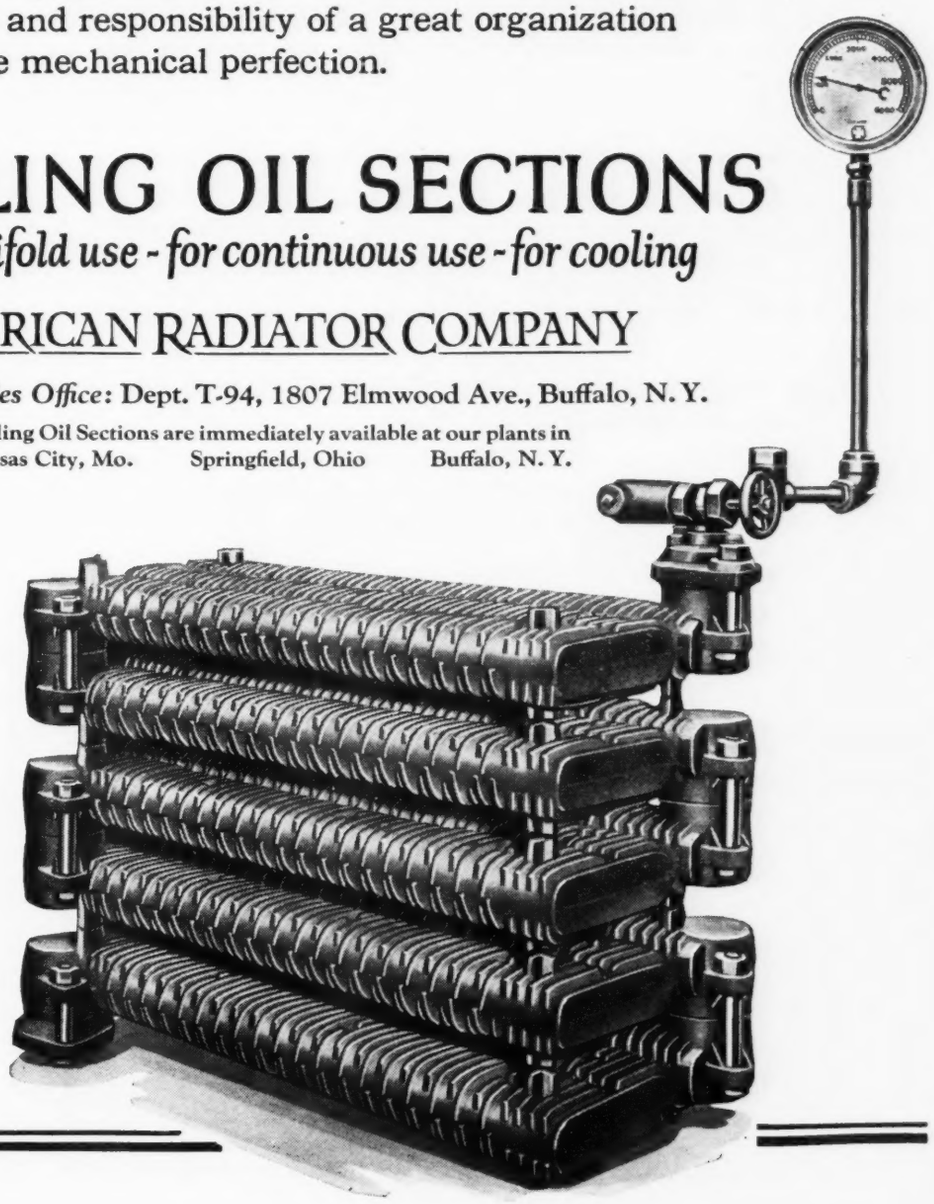

Actual photograph, showing Sterling Oil Sections and flanges under 1000 pounds hydro-pressure. Highest pressure at which section fractured — 1220 pounds.

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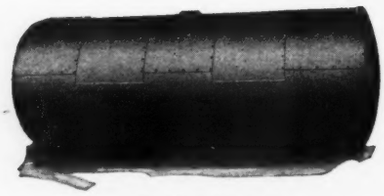

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National Petroleum News
830 Caxton Building **Cleveland, Ohio**

is keen. Stocks of crude oil, except those held by the Midwest Refining Co. and its affiliated companies and the Sinclair Crude Oil Purchasing Co., are small Salt Creek crude is still posted a $1.60, but most of the "free" oil is bought at $2.00. Midwest Refining Co. purchases from the companies whose operations it conducts on contract, based upon the price of refined products. Not many switches of connections have been made recently and the amount of oil which can be diverted from one refiner to another by bidding up for it is small.

And Salt Creek is about the only field in the state where any trading can be done. Fields like Elk Basin, Grass Creek, Lost Soldier, Big Muddy and Rock Creek are held in their entirety by producing companies which either have refining connections of their own or have selling policies which have been established over a period of time and are hence unshakable. A number of mergers and consolidations are rumored, but no material changes have been made.

The diversion of 300 or 500 barrels of Salt Creek oil from one refiner to another is a matter of general comment. That's how tight the situation is.

Wyoming, in an oil way, and particularly Casper, has passed through a hard winter. About all they had to console them was good weather. The railroad to Salt Creek has diverted considerable business from Casper, but the main depressing factor was the general stagnation of operations caused both by the field decline and the low price of oil. Many people have moved away; there are scores of vacant houses. Casper put on something of a boom three years ago which was healthy for more than a year. Realty values soared and there was a shortage of living quarters and office space.

Boom Has Subsided

Then Salt Creek started its precipitous decline, Teapot proved to be a small field and a receivership later stopped what activity there was. Thus, Casper is for the present stage of business, overbuilt in many ways. Two splendid hotels, completed within the past year, came too late It will require something of magnitude in the way of a field, within reasonable distance of Casper, to take up the slack in business here generally. Added to the decline in field there was a slump in refinery operations toward the close of last year and for reasons of lack of oil, the resumption on the original scale is not a possibility.

Consider, first of all, the outstanding capital investment made in this territory within the past two years. That is the construction of the Sinclair Pipe Line Co.'s line from Teapot to Freeman, Mo. Its cost was $21,000,000, according to the statement made by its attorney to the court at Cheyenne in the recent suit of the government for cancellation of the Teapot lease. The line can, during the summer months and operating under highest pressure, deliver to terminal at Freeman, 45,000 barrels daily.

Pending the construction of the line the Sinclair Crude Oil Purchasing Co. constructed a 12 million barrel capacity

tank farm at Clayton, which is west of Douglas and east of Casper. The tanks are practically filled, about a half million barrels of room being left. The oil which went into them was Teapot dome production and government royalty oil from Salt Creek bought by the Sinclair Crude Oil Purchasing Co. under contract. The latter class of oil is by far the greater. Teapot has produced during its life only about 2,500,000 barrels.

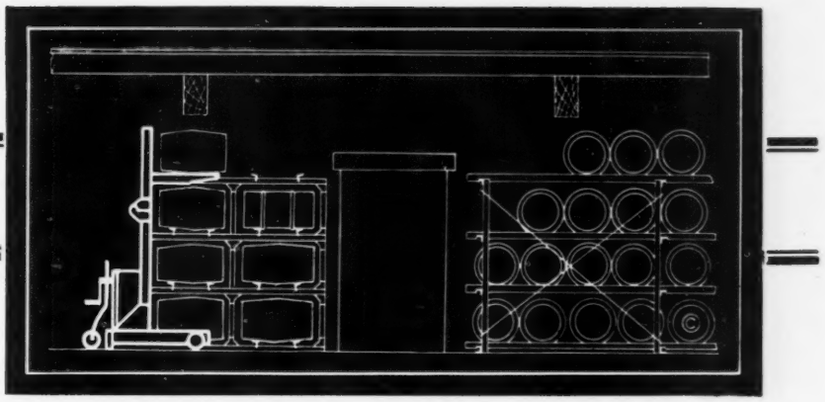
The huge pipe line eastward is now running about 14,000 barrels a day, or a little less than a third of its maximum capacity. The government royalty oil in Salt Creek amounts to about 9000 barrels a day, Teapot's production is roughly 2000 barrels and in addition to this amount, the Midwest Refining Co. is selling to the Sinclair Crude Oil Purchasing an amount equivalent to that which Teapot produces. These companies have a contract for some amount of oil which is delivered by the Midwest in exact equation to Teapot's production.

Now, what will happen with respect to this pipe line? Here is a refinery at Casper which requires about all the oil that Salt Creek will yield. Here is this pipe line which should be amortizing its investment. With production as of the present, one of them could be operated to capacity.

The refinery has rated capacity of 50,000 barrels daily. It is now running between 30,000 and 35,000 barrels a day and some little time ago was down as low as about 27,000 barrels crude charged daily. Some new construction is under way out there, but not of a nature to increase the crude charging capacity, as was first reported. It is merely designed to increase the gasoline recovery. Twelve cracking stills of the newer type which operate at 350 pounds pressure are being put in here and three of the same type at the Standard's cracking plant at Glenrock, where pressure stock is received from the Continental Oil Co.'s (Mutual) plant. The type now in service at the Standard's plant here is the 90-pound.

Strategic Refinery Location

There is a good reason why the refinery here will be maintained at fairly high capacity. That is the existence of cheap fuel gas. For two years the refinery division here has enjoyed high capacity. That is the existence of a good export business through the con- a good export business through the contract it has with the Standard Oil Co. of New Jersey which calls for 100,000,000 gallons annually. A specially designed, hand-tooled freight rate, enables them to compete with the Mid-Continent group on this business, despite the excessive freight haul. This export business, assuming the refinery in Casper to operate at a uniform rate of 35,000 barrels daily over the year, would care for about 40 per cent of the output on the old basis of recovery. What increase the new stills will give over the old rate of roughly 50 per cent gaso-



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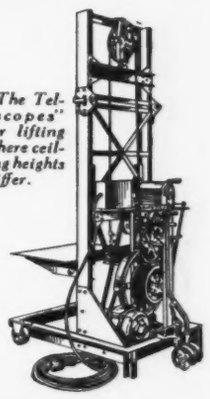

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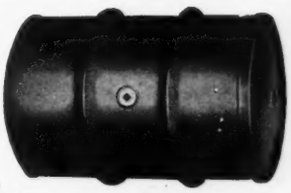

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Gasoline Dispensers Are Built Exactly the way You asked Us to Build them!

We have built into Victory Visible Gasoline Dispensers all the practical, sensible, serviceable features that our customers for 25 years have shown us to be desirable.

These pumps therefore, embody the piled-up experience of tens-of-thousands of retailers, and meet not only all the usual requirements, but a host of unusual ones—in a way that no other pumps meet them.

This policy of asking our customers what they want, and giving them, *just that*—(plus some refinements they never thought to ask for) has played an important part in the remarkable growth of our business.

The Victory Visible line includes the following new models:

No. 285	10 Gal. Motor Driven
No. 280	10 Gal. Hand Operated
No. 295	5 Gal. Motor Driven
No. 290	5 Gal. Hand Operated

See next page for some of their outstanding features of superiority.

Write for our Bulletins

line from Salt Creek crude, is not known as yet.

Wherefore, these reasons indicate the continuance of a sizeable refining business by the Standard in Casper. In spite of the present worry about a new field, or the lack of one, on the daily charging basis of 35,000 barrels, the refinery here is not distressed about crude. At that rate, it would run somewhere near 11 million barrels annually. The Midwest Refining Co. has in its tank farms at Casper upward of 12 million barrels of crude, or a year's supply. The Sinclair Crude Oil Purchasing Co. has in its tank farm about the same amount and while the latter oil is owned by this other company, presumably the Standard, owning a half interest in it, could buy some for its refinery if it desired.

That seems to leave the pipe line to go on small rations. That oil at Clayton tank farm isn't being moved; only the current purchases are run eastward. It's a fair assumption that it will not be run soon. If the Sinclair purchasing company starts drawing on stocks, the reasonable thing to expect is that it will empty those in the Mid-Continent first. The units there are more flexible in that they are better located. They are in the territory where a flush field, requiring tankage in a hurry is more likely to come in than in Wyoming.

With a continuance of present conditions as to new supply of oil in this territory, the thought in the minds of many is that the Sinclair pipe line can be used to bring oil into the territory. It is designed to pump oil in either direction and that without changes other than valve adjustment at the pump stations. And unless some substantial new supply of oil is found in Wyoming, or elsewhere in the Rocky Mountain territory, we may yet see Mid-Continent crude coming by pipe line to Casper.

For the present the line will be operated as at present—carrying the government royalty oil from Salt Creek, the Teapot production and the amount bought from the Midwest.

Considering only the Wyoming stocks —for the Montana and Colorado stocks are negligible in respect to the general situation—it is interesting to note that on March 1, out of total stocks of 27,529,867 barrels, the Midwest and Sinclair Crude Oil Purchasing-Sinclair Pipe Line Co. held 24,541,558 barrels, leaving only 2,988,309 barrels for all other companies, including the Continental Oil Co., the Producers & Refiners Corp., the Texas Co. and the White Eagle Oil & Refining Co., which four comprise the principal refining interests in the state outside of the Standard of Indiana. The storage as of March 1 is tabulated on page 72.

Not enought storage to embarrass anyone. The empty tankage is significant. The territory must have a field and that pretty soon. It is certain that this year there will be no gasoline looking for a home in the Standard of Indiana territory, as was the case two years ago when the Salt Creek development was on full cry and the Midwest interests were compelled to rush tankage construction to care for their part of the production.

A check on the way the situation now lines up is shown by the production report of the field for February. It divides off as follows:

Company	Producing Wells	Daily Average	Disposition of Oil
Midwest Group			
Wyoming Oil Fields	52	2,415	Midwest Ref. Co., Casper
Midwest Oil & Wyo. Assoc.	133	6,687	Midwest Ref. Co., Casper
Midwest Oil Co	178	9,379	Midwest Ref. Co., Casper
Mountain & Gulf	68	2,827	Midwest Ref. Co., Casper
Salt Creek Consol	129	4,881	Midwest Ref. Co., Casper
Utah Oil Ref. Co	16	1,490	Midwest Ref. Co., Casper
Wyoming Assoc. Oil Co	231	15,893	Midwest Ref. Co., Casper
Parkman Oil Co	6	433	Midwest Ref. Co., Casper
	813	44,005	
Continental Group			
Continental Oil (Mutual)	53	1,538	Midwest Ref. Co., Casper
Continental Oil Prod. Co	60	2,014	Ill. Pipe Line for Imperial Oil, Ltd. and Continental refineries
	113	3,552	
Other Companies			
Prairie Oil & Gas	51	1,199	P. & R. line to White Eagle and Texas Co. Casper
Producers & Refiners	76	2,942	P. & R. line to White Eagle and Texas Co. Casper
Carter Oil Co	36	846	Ill. Pipe Line for Imperial, Ltd.
Ohio Oil Co	99	1,949	Ill. Pipe Line for Imperial, Ltd.
Bessemer-Blackstone	2	63	Central P. L. for Texas Co.
Isenberg-Littlefield	1	21	Central P. L. for Texas Co.
Kinney Coastal Oil Co	15	833	Central P. L. for Texas Co.
Mosier-Salt Creek Oil and Schuster Oil Co	7	334	Central P. L. for Texas Co.
Texas Production Co	3	33	Central P. L. for Texas Co.
E. T. Williams Oil and Five Tribes Oil Co	29	881	Central P. L. for Texas Co.
Sinclair Wyoming Oil	14	388	Central P. L. for Texas Co.
Pacific Oil Co	2	42	Midwest Refining Co., Casper
Bonfils et al	7	489	Midwest Refining Co., Casper
Duthie Oil Co	5	Off	Midwest Refining Co., Casper
Empire State Oil	5	296	Midwest Refining Co., Casper
Marine Oil Co	26	504	Midwest Refining Co., Casper
Hardrock Oil Co	1	Off	Midwest Refining Co., Casper
Staley Syndicate	11	145	Midwest Refining Co., Casper
Western States O. & L	21	552	Midwest Refining Co., Casper
Domino Bessemer Oil	7	127	Midwest Refining Co., Casper
Wyokans Oil Co	14	331	Midwest Refining Co., Casper
Grand Total	1,358	59,543	
Average Production per well		43.8 barrels	

Note: Well average figure given is on basis of total number of wells. Actually leaving out wells off production, average per well in February was about 54 barrels daily.

Deduct from the foregoing the roughly 8500 barrels daily royalty oil which goes to Sinclair, and the amount is further reduced.

Taking the other fields of the state in their order, the closeness with which the oil is held is noteworthy and further indicates continued utilization of only part of the refining capacity in the state. The developed fields line up as follows:

Big Muddy, Converse Co. (33.5 Be.)

Company	Wells	Daily Average	Disposition of Oil
Continental Oil	101	2,077	Mutual plant, Glenrock
Ohio Oil Co	69	776	Imperial Oil, Ltd.
Midwest Ref	10	144	Mutual plant
Texas Prod. Co	19	283	Texas plant, Casper
	199	3,280	

Elk Basin, Park Co. (43 Be.)

Midwest Ref. Co	57	627	Midwest Ref. Co., Greybull
Ohio Oil Co	57	243	Midwest Ref. Co., Greybull
Continental Oil	23	60	Midwest Ref. Co., Greybull
	137	931	

Grass Creek, Hot Springs Co. (43 and 25 Be.)

Midwest Ref. Co	82	907	Midwest Ref. Co., Greybull
Continental Oil	34	350	Midwest Ref. Co., Greybull
Ohio Oil Co	215	1,539	Midwest Ref. Co., Greybull
Others	5	Off	
	336	2,796	

Note: The above daily average production was divided 2,354 barrels light oil and 442 barrels heavy oil. Five wells produce heavy oil.

Lost Soldier, Sweetwater Co. (32 Be.)

Prairie Oil & Gas Co	47	3,677	P. & R. plant, Parco
Utah Oil Ref. Co	1	112	Utah plant, Salt Lake
Prod. & Ref. Corp	5	918	P. & R. plant, Parco
Texas Production Co	3	469	Texas Co. plant, Casper
	56	5,176	

Note: Producers & Refiners Corp., which has contracts with Texas Co. and White Eagle O. & R., delivers some Lost Soldier crude produced by themselves and Prairie under those contracts.

Rock Creek, Carbon Co. (35.3 Be.)

Ohio Oil Co	57	3,042	2,500 bbls. daily to Standard plant at Laramie; 500 bbls. daily to Salt Lake City

Lance Creek, Niobrara Co. (43 Be.)

Continental Oil	6	265	Continental storage
Western States O. & L	2	56	Imperial Oil, Ltd.
Ohio Oil Co	15	699	Imperial Oil, Ltd.
Union Oil Co., Cal	3	5	Imperial Oil, Ltd.
	26	1,025	

(Continued on page 85)

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them, just that—(plus some refine-

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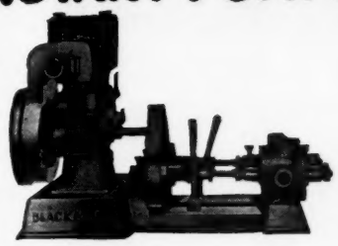

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With the exception of several extremely small fields, a number of which are shut in, the above calls the roll. There is certainly no surplus of crude. In Montana, where the two principal fields are the Sunburst and the Cat Creek, a number of small refineries take care of all that which is not tied up, such as the amount which is shipped to Calgary from the Sunburst field and the Cat Creek oil which goes to the Imperial, the Standard at Whiting and the Utah plant at Salt Lake City. Some of these shipments are going enormous distances these days.

Standard and Midwest Plants

Discussion has been had of the Casper plants of these interests. The next largest refinery of the Midwest-Standard in Wyoming is that at Greybull. This has rated capacity of 8000 barrels. From the Elk Basin, Grass Creek, Bryon, Greybull and Hamilton Dome fields, it had available to it on the basis of the February figures, 4500 barrels daily.

The plant at Laramie has rated capacity of 4000 barrels daily. It is getting 2500 barrels daily from the Rock Creek field.

Continental Plants

The largest plant of the Continental Oil Co. (Mutual) in Wyoming is at Glenrock, which is near the Big Muddy field and from this source the refinery gets all the oil it runs. It has rating of 6000 barrels daily, but is able to get about 2500 barrels. The company's other plant in Wyoming, located at Cowley, has a daily capacity of 1000 barrels, but has been shut down for some time. Production available to it from fields in the region is small. Some 80,000 barrels of crude oil has been accumulated in storage at the plant and it probably will be operated during the summer months when gasoline demand is good.

Texas Co. Plant

This refinery, built at Casper in 1922, is rated at 6000 barrels daily charging capacity. It has available about 4000 barrels from Salt Creek and about 300 barrels of its own in Big Muddy. Contractual relations with the Producers & Refiners Corp. originally called for 2500 barrels a day, but the latter company is not able to supply that amount and keep its own plant at Parco running at present rate.

White Eagle Oil & Refining Plant

The White Eagle built in 1923 a 2500 barrel refinery at Casper. Its sole source of crude oil is the Producers & Refiners Corp. with which it made a five-year contract for 2500 barrels a day. The P. & R. made contracts calling for 5000 barrels daily with the Texas Co. and the White Eagle; its production in Salt Creek is now about 4000 barrels, including that of the Prairie.

Producers & Refiners Corp.

This company has refinery rated at 12,000 barrels daily at Parco, near Rawlins. Its available supply of oil consists of about 5000 barrels daily from the Lost Soldier field, 100 barrels daily from the Ferris field and about 800 barrels daily from the Craig, Colo., field.

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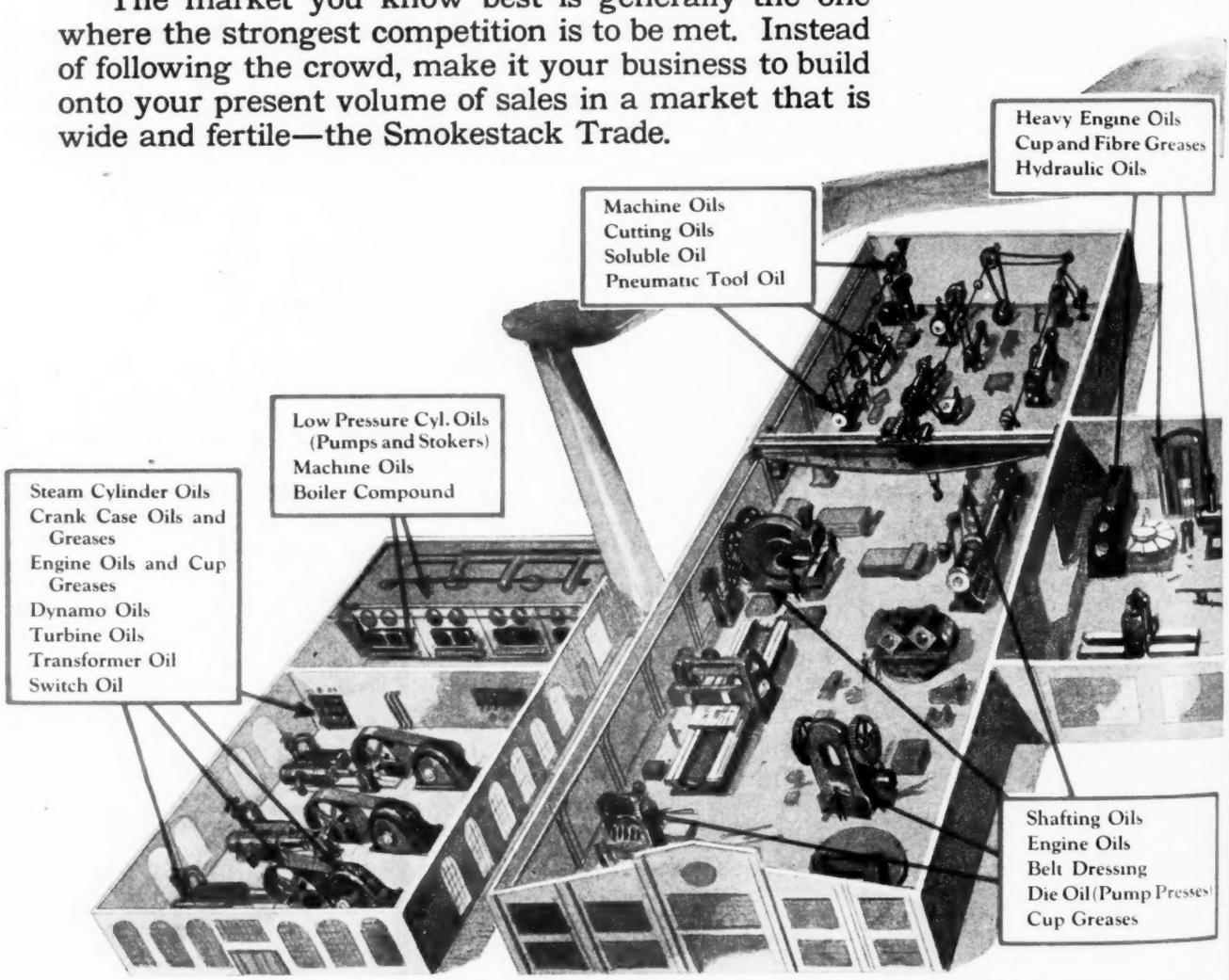

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Ten Dollars, Plus Portable Extinguisher Protects Agitator From Fire

By Paul Truesdell

N. P. N. STAFF WRITER

CLEVELAND, April 25

LOTS of things aren't nearly as hard to do as a fellow thinks.

It depends on how you go at it. Many a man makes up his mind that he must start a savings bank account—next month. He reasons, "There is no use to put in the bank the three or four dollars I have in my pocket now, next month I'll have $100 that I can spare and I will start that savings account off with a bang."

Maybe he does have the spare $100 next month and maybe he becomes a savings bank depositor with it but the chances are about, say, 90 to 10 against it. Most savings accounts are made up of a good many more $5 and $10 deposits than of $100 deposits.

Refinery improvements are a good deal the same way. When a fellow thinks of a "Fire prevention campaign" or of a "Reconstruction program," the vision that generally rises before his eyes is first, the spending of a big amount of money.

And along with the heavy expenses, imagination pictures the scrapping of a lot of equipment, a torn-up plant with operations interfered with and all sorts of annoyance for months while the improvements are going on. Of course, there are a lot of improvements that can't be made without a big appropriation and a lot of construction work but the men responsible for successful operation of refineries are generally not the kind of fellows who sit around and let things slide until they can get $100,000 or $200,000 appropriation to put on an ambitious program of betterment.

You Don't Need to Wait

They know, as a lot of people are learning in the saving of money, that you don't need to have an imposing amount of money to make a good beginning.

Just a few dollars of expense, coupled with brains and ingenuity can make a big difference in the efficiency and fire safety of a plant and such little and inexpensive, but very important improvements, are being made right along, in refineries everywhere.

Take the case of John H. Erter, who is directly responsible for the operation of the plants of the Anderson-Prichard Oil Corp., with headquarters in Oklahoma City. One of the company's plants of about 1500-barrel capacity, is located in Cyril, Okla., and the other, about the same size, is at Colorado, Tex. Mr. Erter who is a chemical engineer by training is General Superintendent of both plants. Both are skimming plants, purely, having no cracking equipment.

One of the big expenses connected with refinery operation is the keeping up of insurance and the expense of carrying the insurance is in direct proportion to the best estimate the insurance people can make as to the fire hazard at the particular plant. The insurance premiums on the Cyril refinery were pretty high.

Never Had an Agitator Fire

Now Mr. Erter, notwithstanding that in six years' experience in refinery operation he has never had an agitator fire nor had a man seriously hurt, realized that the ordinary batch treating of light distillate or naphtha in an agitator by blowing, is one of the greatest fire hazards that can be found about a refinery.

While there is no pressure distillate made at the plant, the nature of the crude run and the fact that the company makes special high gravity solvent naphthas for the paint, rubber and dry cleaning trades, makes it necessary to treat the naphtha. They have never worked out a continuous treating system because the expense of such a system for treating the various grades of naphtha the plant turns out, would be prohibitive, Mr. Erter says.

If he could work out some method of affording complete fire protection for the agitator he knew that he could reduce treating losses, reduce fire hazard and cut his insurance premuims by something like half.

He went to work to make an agitator fire extinguisher. The accompanying drawing, Fig. 1, shows how he did it.

There was a portable 40-gallon Foamite tank, mounted on wheels already at the plant. These cost about $250 and almost every plant has one or more or at least a wheeled fire extinguisher of some sort. Mr. Erter decided that he could rig up his agitator fire protector with this portable Foamite tank as the base.

Small Conventional Agitator

His agitator is a small one holding 250 barrels, 24 feet high, with a conical roof, just about like any agitator of the same capacity to be found in any western skimming plant. He did some thinking and decided that if he ran a pipe up the side of the agitator, connected it to a T at the top and fitted it with nipple and union at the bottom he could hook it up with his portable Foamite tank and put out any agitator fire.

He knew, however, that if there was a strong wind blowing, and the wind does blow down there, that it would be so hot nobody could get close enough to screw on the Foamite tank, if the wind was blowing against him. So he decided to put one pipe on the north side of the agitator and one on the south side, the prevailing winds there being either from the north or from the south. Here is the material it took

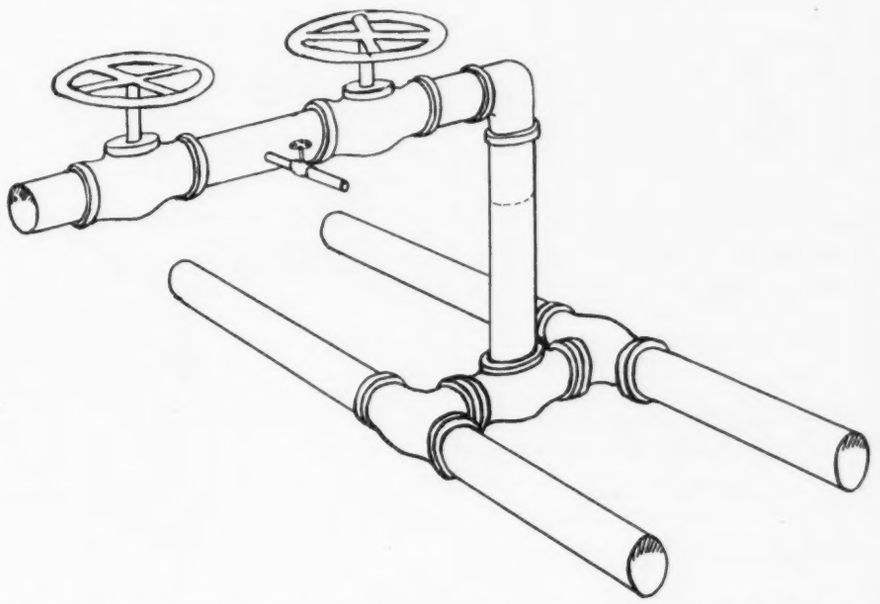

Fig. 3—Mr. Erter's device for measuring the flow of steam into the stills. The horizontal pipe is the steam line and the small bleeder is shown between the two big valves. The vertical pipe is that leading down into the still and the header connected into two horizontal pipes below represents the steam distributing lines in the bottom of the still. The drawing, of course, is not made to scale

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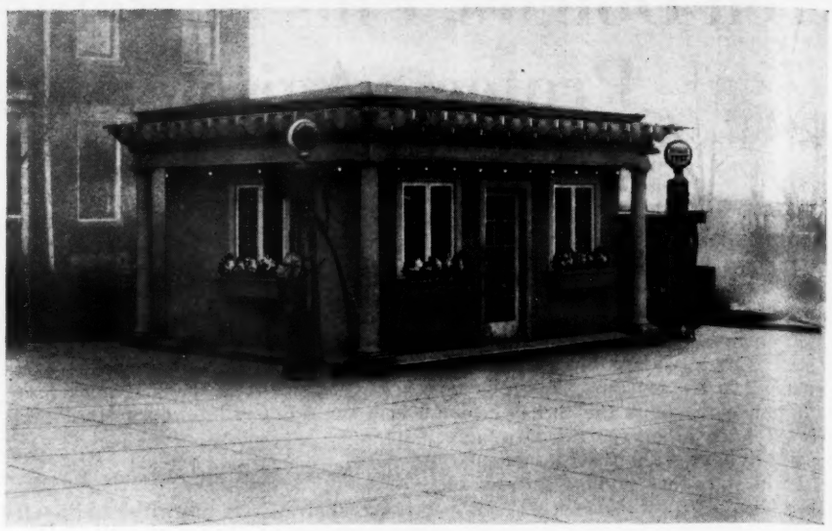

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to rig up his home fire protector for the agitator.

Sixty feet of 1-inch pipe.
Two 1-inch unions.
Four 1-inch ells.
Two small nipples.
One 1-inch T.
Two 1-inch globe valves.

And it took two pipefitters about two hours to do the job.

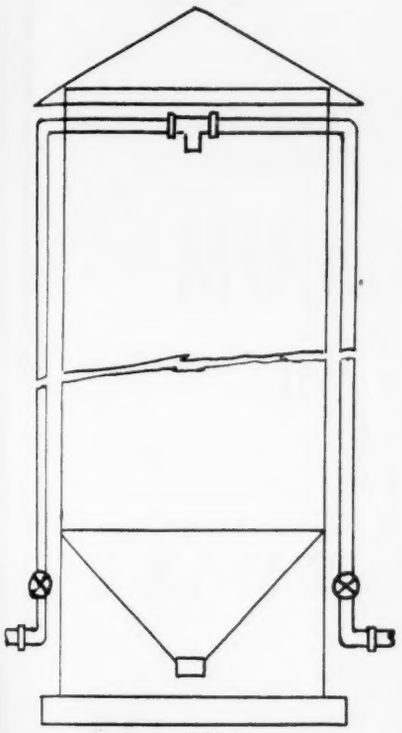

Fig. 1—The agitator at the Anderson-Prichard plant as protected by the simple scheme of Mr. Erter

The men drilled holes in opposite sides of the agitator near the top and inserted a length of pipe from each side, both screwing into a T in the center. These lengths of pipe extended out a few inches from the sides of the agitator where they were fitted with ells. Into these ells were screwed vertical lengths of pipe that extended to within a few inches of the ground and terminated in ells each fitted with a short length of pipe, a nipple and a union.

In case of fire the Foamite tank is run up to the agitator to the pipe on the side from which the wind is coming, the nozzle on the hose attached to the tank is screwed off and the hose nipple connected by the union into the pipe. Then the gate valve in the pipe is opened and the tank turned over.

In the outer tank of the Foamite fire extinguisher is a solution called by the Foamite people solution B, composed of bi-carbonate of soda and licorice. There is an inner cylinder inside the outer tank which is filled with liquid aluminum sulphate, which is called solution A. When the extinguisher stands in normal position, the top of the inner tank is uppermost so that the two solutions are kept apart.

When this tank is turned upside down, the two liquids are mingled and the

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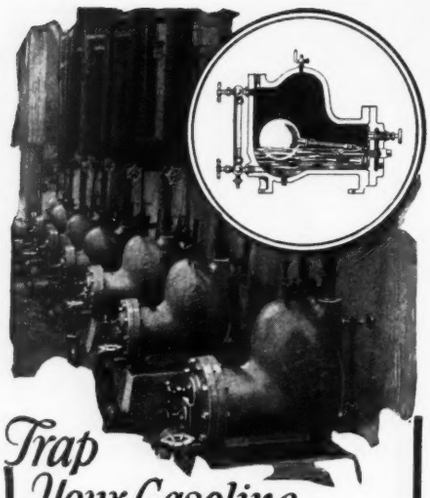

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Foamite solution is formed. The suds or foaming mixture that is formed by the mixing of these two solutions is eight times by volume the quantity of the two solutions as they are contained in the tank, thus the 40-gallon tank would give .320 gallons of foam.

The force of the chemical reaction and the expansion of the liquids is sufficient to drive the foam up the pipe

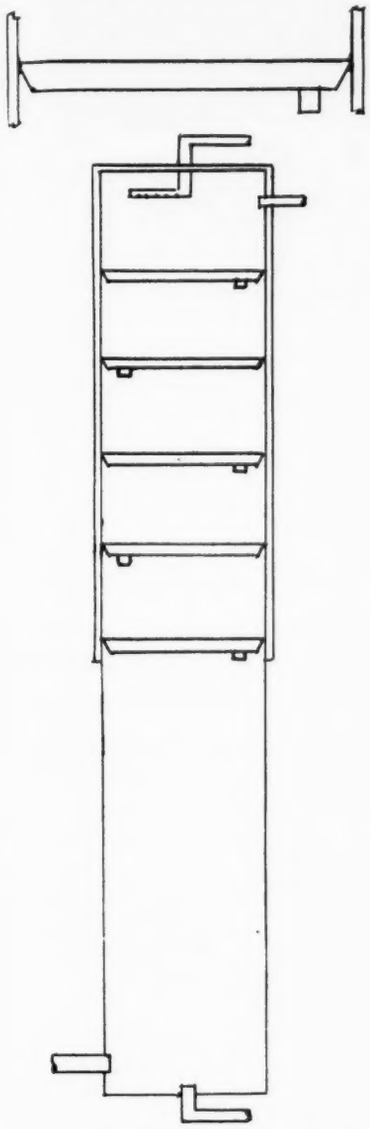

Fig. 2—Design of Mr. Erter's bubble tower. The metal housing around the outside of the bottom half of the tower to protect it against temperature changes is not shown. At top, detail of pan showing how these are welded into the tower to allow for expansion and contraction of the metal without buckling the plates or the walls of the tower

where it is sprayed down into the agitator through the T. The refinery is manned by three men on each shift and each crew of three has been thoroughly drilled in the use of this fire fighting device.

Crews Given Fire Drill

Drills are held frequently and the think has been so well learned that either of the crews can get the fire extinguisher in place and connected ready to turn the foam on the fire within three minutes, or before the fire would have

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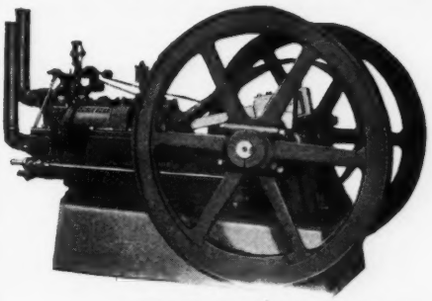

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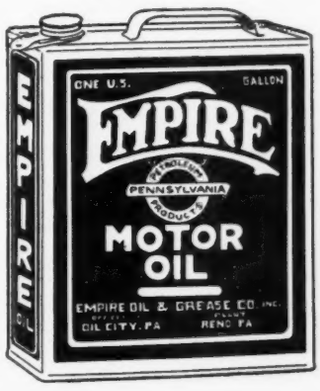

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Balloon tires require accurate pressure to insure long life. Dixie stands are equipped with a large accurate U. S Gauge, calibrated in one pound units, for balloon tires.

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Exact tire pressure shown without removing chuck

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a chance to do much damage to the lead lining of the agitator.

And melting down of the lead, making relining necessary, is a source of considerable expense. The unions on the bottom of the pipes for connecting with the Foamite hose are loose so they can be screwed up with the fingers and it is somebody's job to keep them that way They are not allowed to rust fast.

It should be remembered in connection with this simple fire fighting device that Mr. Erter is a chemical engineer and knows his figures. So these figures could safely be taken by anyone in designing a fire protection system for an agitator of that size. It is pointed out, however, that for an agitator of a large size or where conditions were different, the design would have to be refigured, size of pipe to be used and frictional resistance would have to be considered, as well as knowledge of how high the reaction of the chemicals in the fire extinguish would deliver the foam.

Mr. Erter knew these figures and his system is successful. And aside from the portable fire extinguisher, which was already at the plant, the cost of the fire fighting device was less than $10. And yet this small expenditure gave the refinery the benefit of the insurance rate allowed on fully protected plants, which means a considerable saving in a year of insurance premiums.

Carbon Tetrachloride Also Used

A carbon tetrachloride fire extinguisher also is being used at some plants in a similar way. This consists of a 20-gallon tank which contains 10 gallons of carbon tetrachloride, the remainder of the tank being filled with air under pressure of 140 pounds. This tank is connected up with a piping system similar to the one described for the Foamite installation except that it has a sprinkler head attached to a T in the top of the agitator and this is controlled by a silica bulb, the latest form of fuse link, which melts at 250 F. and opens the sprinkler head through which, by the air pressure, the fire extinguishing vapor is sprayed on the fire. The carbon tetrachloride, when the pressure is released, vaporizes, forming about 60 cubic feet of vapor to the gallon of liquid.

This vapor, being five or six times as heavy as air, settles down on the fire, smothering it instantly. There may be other types of portable fire extinguishers which, with modifications, may be used for the protection of agitators in a similar manner at little cost. The 10-gallon tetrachloride extinguisher is said by the manufacturers to be suitable for agitators up to as large as 20 feet in diameter.

But cutting down the insurance rate by the installation of a simple protective device is only one of the things that Mr. Erter has done to improve the operation of his refineries.. For one thing, he has transformed old shell towers into bubble towers that did not cost much and which gives excellent results.

These towers are four feet in diameter and 25 feet high. The lower half of

Patent Pending

KEEPING UP WITH JONES

Are you just a few jumps ahead of him or lagging behind?

Jones is one of those up to date fellows who serves his oil in sure grip bottles, from a tray in which the bottles are always covered, assuring the sale of clean oil free from dust and dirt. Don't let Jones get ahead of you as the motorist recognizes the alertness to serve him well and quickly.

Investigate the Neil Anti Dust Dispenser and Sure Grip Bottles by inquiring of

WM. Neil & CO.

617 W. Division St. Chicago, Ill.

Control Your Own Customers

By Supplying Them With an Individual Pump For Underground Storage

Business from truck fleet owners, as well as from individuals who have private garages, is very profitable and is eagerly sought by oil jobbers.

Here's the way to get and hold this business. Furnish them with a SAVEGAS pump, for gasoline or oil, which gives your customer the advantage of conveniently and quickly filling his car, truck or tractor direct from his own barrel or tank. Attaches direct to tank or drum. You'll save your customers money too.

Nothing Like It on the Market

Sturdily built and durable, the SAVEGAS pump meets with instant approval. There's no danger of fire or theft, as the pump locks. It provides the independent jobber with an unequaled sales-getting and sales-holding weapon against competition.

Model B, for Barrel.....$17.50
Model C, for Tank.....$19.00

Write today for Descriptive Circular

SAVEGAS PUMP SALES CORP.

3435 Dearborn St. Chicago, Ill.

CREDO

We believe that a reputation for honesty is the best reputation for any organization to have.

We believe that we are best able to maintain our reputation for honesty and for keeping our agreements when every person connected with our company has a sincere interest in its welfare, its success and its reputation.

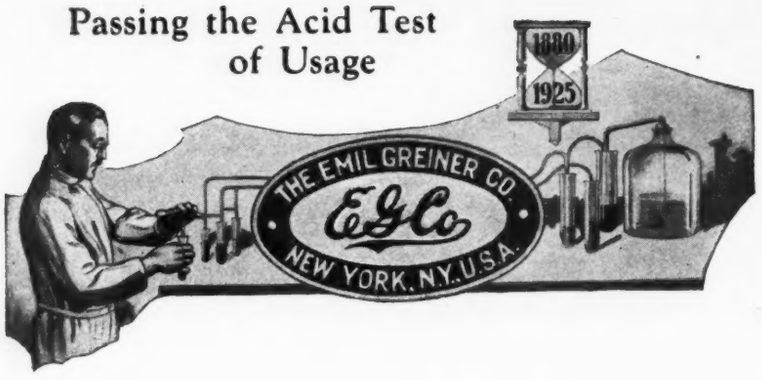
We believe that the pleasure each individual feels in contributing to the good name of an organization and the exhilaration of working together are as necessary for the success of a business enterprise as for the success of an army.

JAMES B. BERRY'S SONS COMPANY

PETROLEUM PRODUCTS

Oil City, Pa. Chicago New York Boston
Philadelphia Tulsa London, Eng.

Passing the Acid Test of Usage



THE securing of a dependable Supply House is the first consideration of experienced purchasers of Oil Testing Apparatus.

Apparatus, stamped with The Emil Greiner Company trade mark, guarantees your receiving quality and scientific accuracy—always. Look for this quality mark on your instruments.

Remember Our Specialties

Centrifuges and Accessories	**The Visconvertor**
A. S. T. M. Thermometers	**Asphalt Apparatus**
Flash Testers	**A. P. I. Hydrometers**
Viscometers	**Standard A. S. T. M. Apparatus**

The Mowen Thermostat Viscosity Bath

We are also distributors of PYREX Oil Testing Apparatus and can furnish PYREX Standard Distilling Flasks from stock.

We are able to handle your requirements with reference to special apparatus.

THE EMIL GREINER COMPANY

E&Co *Chemical Glassware, Laboratory Supplies and Chemicals* E&Co

55 VANDAM ST., NEW YORK, N. Y.

ADVANCE

Cold Tested Gerene

For Transmission and Differential Gears

The gear lubricant that is guaranteed to lubricate efficiently under extreme cold condition. In your next order specify Advance Cold Tested Gerene.

AMERICAN

Oil Corporation

Jackson, Mich.

each is simply a hollow tower, uninsulated with sheet metal housing to offset climatic conditions and depends on the cooling effect of the air for its results. The upper half contains five bubble plates or pans, to each of which is spot welded 29 bubbler caps which are simply 3-inch bull plugs cut off.

The pans were welded into the tower, in fact all the work was done by acetylene welding, and an ingenious method was used to allow for expansion and contraction without buckling the plates. A drawing, Fig. 2 gives a cross section view of the tower and shows how the pans were welded in. The sides of the pans are slanted inward, like a milk pan, the edge is welded to the skin of the tower all around and the space caused by the dishing of the sides takes care of expansion and contraction.

The heavier ends of the vapors are knocked back by atmospheric cooling in the lower section of the tower so that only the comparatively light vapors penetrate into the bubble plate part of the tower. Countercurrent scrubbing of the vapors is accomplished by feeding in under automatic control charging stock over the top at a predetermined rate.

This transformed tower cost only about $1000.00 including insulation, metal housing, plates and labor and Mr. Erter says that in other towers of the same kind that are being transformed for the Texas plant of his company, the cost will be cut considerably below that figure.

Another problem that gave Mr. Erter some trouble, as it did O. C. Smith at the Skelly Oil Co.'s refinery at El Dorado, Kans., was that of controlling the volume of steam going into the stills. They use a good deal of steam at this plant in making their solvent naphtha. Mr. Erter solved his problem in a different way from Mr. Smith and it works out satisfactorily in his case. Mr. Smith's "harp" was described in the Feb. 25 issue of N. P. N.

His steam goes into the stills through a 2-inch line and he found, like Mr. Smith, that cracking an ordinary 2-inch globe valve to admit the required amount of steam was an uncertain and wasteful way. So instead of a globe valve he put a 2-inch needle valve on the steam line as shown in the drawing, Fig. 3. Between the needle valve and the point where the steam line enters the still, he inserted a short half-inch bleeder line with a globe valve. Another globe valve is placed in the steam line between the bleeder line and the still.

When the still man wants to know how much steam is going into the still he closes the 2-inch valve in the steam line, opens the half-inch bleeder valve and observes how much steam comes out. While this does not measure the steam any more than the device of Mr. Smith, it does give the still man a fairly accurate idea of how much steam he is using and he can increase or decrease the amount by opening or closing the needle valve.

No, it doesn't necessarily take much money to improve refinery efficiency a whole lot.

Allen of Pierre Sells Paint to Oil Men

CHICAGO, April 23.—F. G. Allen of Pierre, S. D., is back in business, and he was on the receiving end of many congratulations during a recent trip to Chicago. Mr. Allen is well known in the oil trade, was once president of the South Dakota Independent Oil Men's Association and active in the affairs of national groups. But he was almost ruined financially about a year ago. After two years of unprofitable operation as a result of political meddling in the oil business, the Allen Oil Co.'s bulk plant at Pierre burned, and the loss was too much.

His business in Chicago was representing the Stewart Brothers Paint Co. of Alliance, O. He is a salesman at large for that firm marketing their "Oilco" finishes for the petroleum industry. The specialty is a paint with special qualities for resisting oil. It is difficult to compound any paint that will stand up long under attacks of gasoline. These paints come in 1000 shades and are for gasoline pumps and tank wagons. Mr. Allen says the formula for the paint was worked out by Stewart's chemists in collaboration with representatives of a pump manufacturer who set up difficult requirements for their paint.

During the recent N. P. M. A. convention in Chicago, L. V. Nicholas, president of the association saw Mr. Allen in the audience and recognized the martyr of McMaster's senatorial campaign, so he called him to the platform and gave him a public introduction. He told the oil men that Mr. Allen was one of them, deserved their patronage because he had fought their battles for them and furthermore had something to sell that was worth buying.

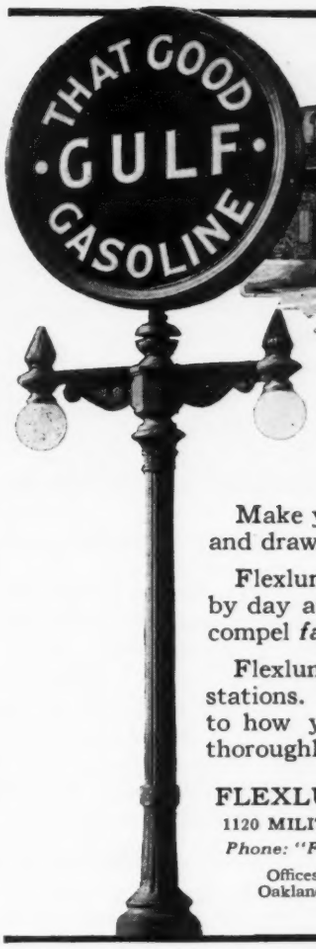
North Carolina Dealers to Organize

CHARLOTTE, N. C., April 23.—A meeting at which about 350 gasoline and tire dealers throughout North Carolina are expected, will be held on May 12 at the Hotel Charlotte, this city, for the purpose of organizing a state association, according to Keeley A. Grice, president of the Automotive Service Assoc., with headquarters here.

L. V. Nicholas, president of the National Petroleum Marketers Assoc., Chicago, has been invited to address the meeting. George J. Burger, president of the National Tire Dealers Assoc., has already accepted an invitation to speak before the convention.

Exhibits of equipment in the marketing branch of the industry will be displayed.

DEARBORN, MICH.—Dearborn Oil Co. expects to open its new service station the middle of this month, with Charles Crowley in charge, according to J. M. Ragle, of the Dearborn company.



Draws Trade From Blocks Away

Make your gas station pay a greater profit. Attract and draw trade from near and far.

Flexlume's bold, snow-white raised letters of glass by day and brilliant solid letters of light by night compel *favorable* attention, day and night.

Flexlume signs are producing results for other gas stations. Write for photo-prints and information as to how your own needs can be economically and thoroughly satisfied.

FLEXLUME CORPORATION
1120 MILITARY ROAD, BUFFALO, N. Y.
Phone: "Flexlume"—All Principal Cities
Offices also at Detroit, Los Angeles, Oakland, Calif. and Toronto, Canada

Reading 400# WSP Steel Globe Valve

Reading steel gate valves look simple. They *are* simple. Yet each valve embodies 15 special features worthy of your consideration as a valve user. Write for illustrated booklet.

Reading Steel Casting Co., *Inc.*
Reading Valves and Fittings Division
Bridgeport, Connecticut
Offices and Warehouses in Principal Cities

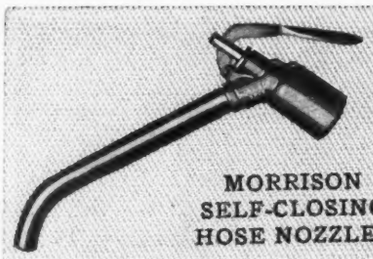
READING *for steel*
PRATT & CADY ***for iron and bronze***
specializing for quality valves and fittings

NIAGARA OIL
METERS

They automatically measure and register any oil product that is pumped or that flows by gravity in a pipe or a hose. Many in use by refineries, jobbers and retailers.

Write for prices, testimonials and illustrated catalog.

BUFFALO METER CO.
Est. 1892
2889 Main St., Buffalo, N. Y.



MORRISON SELF-CLOSING HOSE NOZZLES

The wet hose nozzle method is winning the quick approval of oil men everywhere. It saves gasoline overflow at the automobile tank. The driver may remain in his car, since the station attendant can leave his pump and operate the nozzle.

The Morrison wet hose nozzle is self-closing and positive. Though sturdy, it is light and easy to handle. It is the most practical and successful development of this idea which is quickly becoming the popular way of filling the auto tank.

MORRISON SELF-CLOSING AND LOCKING BARREL FAUCET

This is the widely used faucet, known as Type "B." There are two other types of these well known faucets.

MORRISON BALL AND SOCKET JOINT

Saves the curb pump hose. Prevents all bending and breaking. Does not leak.

MORRISON RADIATOR FAUCET

The service station man, as well as the car driver, appreciates the convenience of this device....Made of brass, it opens easily and closes tightly.

Buy Your Service Station Needs Now

Study the items illustrated and otherwise listed on this page. You will find that every device to simplify your work and add to your station convenience can be ordered from Morrison Bros.

While this firm has become known generally as "Oil Equipment Headquarters" this leadership can be applied especially to our brass manufacturing.

Study your needs now and write for prices and details. Our service will be promptly attentive so as to prepare you without delay for the oncoming season.

Additional Service Station Items

Plain hose nozzle, fill caps for underground tanks, foot valves, curb pump angle valve, self-closing auto washing faucet, self-locking fill caps, fill caps, **pipe and strainer, reducer bushings, frost-proof slip joints, underground tanks, (black steel and galvanized).**

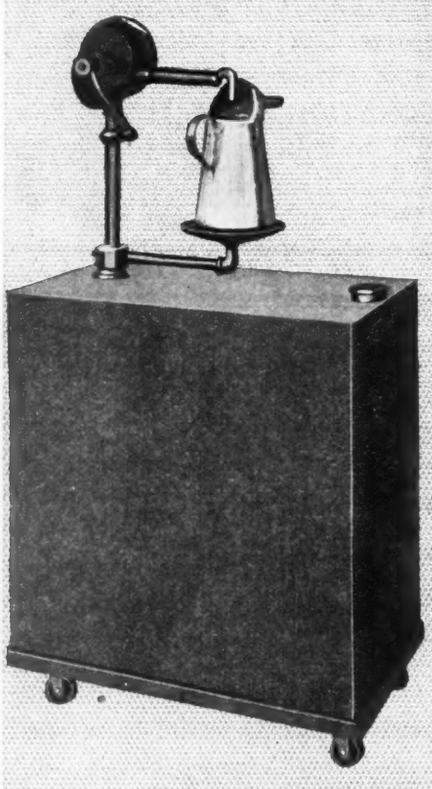
Also we manufacture truck tanks, bulk storage tanks, faucets, valves, vents, etc., and many other items for the distribution of oils and greases.

Morrison Bros.

"OIL EQUIPMENT HEADQUARTERS"

DUBUQUE, IOWA

Wm. M. Wilson's Sons, Philadelphia, Pa., 223 S. Sixth St.
Moore & Kling, Inc., Boston, Mass., 233 Purchase St.
W. E. Harman & Sons, Pacific Coast Rep., Los Angeles, Calif., 422 E Third St.
W. S. Nott Co., Minneapolis, Minn., 2nd Ave. N.& 3rd St.
Dempster Mill Mfg. Co., Omaha, Neb., Beatrice, Neb., Denver Colo., Oklahoma City, Okla.
K-M Supply Co., 123 W. 8th St., Kansas City, Mo.



MORRISON OIL PUMP AND TANK

This newly designed rotary pump is so sturdy and will prove so serviceable that Morrison Bros. do not hesitate to offer free replacement if one ever wears out.

The complete unit includes pump and tank. The tank is strong, neatly painted and offers the most convenient method for dispensing oils. It is equipped either with or without a roller base.

MORRISON PUMP FOR BARREL

This is the same pump as illustrated in the pump and tank unit. It may be quickly attached or removed from any barrel.

MORRISON DISPLAY RACK

This compact yet substantial display rack for oils and greases will speed up sales, besides offering an attractive arrangement of your stock.

It has six shelves and will carry a distributed load of 600 pounds. Attractively painted. Opens and closes for moving or shipping.

ON THE LAZY BENCH

Bits of History

"I'll take a weak end off," said the executioner as he beheaded Louis VI.

"Step on it, kid," shouted the fast young Raleigh as he threw down his cloak for Queen Elizabeth.

If Cleopatra made Mark Anthony the Mark he was, and Caesar made Brutus the Brute he was, then who in the deuce made Lydia Pinkham the Pill she was?

A cake-eater usually proves a poor bread winner.

A sheik rarely has any sand and sometimes gets his deserts.

To think is natural—yet some people are always trying to thwart nature.

—Perfect Star

◈ ◈ ◈

Making Herself Clear

An Indian paper furnishes us with a recent specimen of "English as she is wrote." It is a copy of a letter sent by a lady teacher to the Director of Education, Manila, and reads: "Dear Sir, I have the honor to resignate as my works are many and my salary are few. Besides which my supervising teacher makes many loving to me to which I reply, 'Oh, not, Oh, not!'—Very respectfully, Josefina."

—Magnolia Oil News

◈ ◈ ◈

"Even To The End"

The efficiency man had passed away, and as the pall-bearers approached the casket to carry the remains to the cemetery the corpse suddenly sat up.

"How many pall-bearers are there?" he asked.

"Six," replied the startled men.

"Cut out four of them," said the corpse with a sigh.

—The Look Box

◈ ◈ ◈

W-h-o-o-!

Our English friend was out for a walk in the country with his American friend when they were startled by an owl's "W-H-O! W-H-O!"

"What's that?" exclaimed the Englishman.

"That's an owl," replied his friend.

"I know it's an 'owl, but what the 'ell is it that's 'owling?"

—Perfect Star

◈ ◈ ◈

Man (in barber chair): "Be careful not to cut my hair too short—people will take me for my wife'"

—Stanolind Record

Maybe It's Her Ears

Stage Manager: "My dear, I wish you would wear a different gown in the second act."

Rita Ravenyelp: "But that is the latest style, and I paid two hundred dollars for it."

Stage Manager: "That may be true, but when your husband says: 'Woman, you are hiding something from me,' the audience can't figure out what he means."

—Magnolia Oil News

◈ ◈ ◈

For ExService Men Only

There is a story told of a dusky lady, who went into a drug store and asked for one cent's worth of insect powder.

"But that isn't enough to wrap up," objected the drug clerk.

"Man," exclaimed the dark lady, "I ain't asked you to wrap it up. Jes' blow it down ma back."

—Stanolind Record

◈ ◈ ◈

What Could Be Worse

Two gentlemen of Hebrew extraction were ship-wrecked. For two days they floated around on a life raft. Near the end of the second day one of them cried: "Morris, look! I see a sail!"

"Vell, vat good does dot do us?" snapped back Morris. "Ve got no samples."

—Parkersburg Rig and Reel

◈ ◈ ◈

He'll Be All Smiles

Mrs. A.—"I've planned such a delightful surprise for my husband."

Mrs. B.—"What is it?"

Mrs. A.—"He'll be getting his spring suit out shortly and I've put a quarter in one of the pockets."

—Magnolia Oil News

◈ ◈ ◈

Times Change

Mother—"When I was your age, young lady, a nice girl would never think of holding a young man's hand."

Daughter—"But, mother, nowadays a nice girl has to hold a young man's hand."

—Doherty News.

◈ ◈ ◈

The Brother of Pete

"Have you seen Petro?"

"Petro who?"

"Petrolatum."

"No, but Kerosene 'm."

—Stanolind Record

Typical Interior, MILLIKEN BUILDING, 100 ft. Wide and 500 ft. Long.

Milliken Buildings

These buildings are standardized in a wide variety of types and sizes for service in different branches of the oil industry. They are the best standardized buildings and the lowest in cost.

Every building is Complete, All-Steel, Permanent and Fireproof. Formed of standard structural steel with galvanized corrugated steel or other enclosure. The material is stocked and can be shipped on short notice. Erection anywhere with local labor.

MILLIKEN BUILDINGS are being used by leading oil interests in all parts of the world.

Send for complete, illustrated catalog No. 20, "CHOICE OF A THOUSAND BUILDINGS" mailed free on request.

Milliken Brothers Mfg. Co., Inc.
2395 Woolworth Bldg., New York, N. Y.

Also Manufacturers of Transmission Towers — Radio Towers

42 Years Scientific Refining

H. B. S. MOTOR OILS

A high grade product

WRITE OR WIRE
- FOR SAMPLES -
AND QUOTATIONS

The National Refining Co.
National Headquarters: National Bldg.
Cleveland, Ohio

THE LOCATION of dealers who feature Sinclair Oils makes no difference in the closeness of the contact between us—a contact closer than is usual between buyer and seller.

Sinclair dealers are never without Sinclair service and co-operation. Sinclair recognizes and fulfills its obligations to the dealer.

SINCLAIR REFINING COMPANY

NEW YORK	CHICAGO
Sinclair Oil Bldg., 45 Nassau St.	22nd and Rockwell Streets
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SINCLAIR OILS

REFINERY-TANK WAGON MARKETS

Mid-Continent Markets Slacken; Heavy Gasolines Softer

Staff Special

TULSA, April 25

MID-CONTINENT refiners have closed a quiet and uneventful week more particularly so when contrasted with the active buying and advancing prices which characterized the gasoline market last week. New gasoline business has been slower, especially on the heavier grades, and refiners as a whole have not sustained prices on these grades. The lighter gasolines continued strong, with exporters supporting the market for small quantities.

Natural gasoline continued to soar, with much shopping required to find most grades. Kerosene remained unchanged, and gas and fuel oil prices gradually worked to lower levels with slower demand. Lubricating oils, particularly cylinder stocks, were in only fair demand, with some price adjustments, and wax appeared to be holding at last week's levels.

U. S. Motor gasoline has again followed a reactionary trend, which is so often the case after a period of extremely active and swiftly advancing prices. While many refiners actually felt that the market had moved upwards too quickly last week on the heels of heavy purchases by Standard Oil Co., of New Jersey, several others believed that prices might be maintained with a fair amount of jobbers buying, and by the holding down of runs to stills.

Interest in Futures Drags

But neither of these conditions have materialized. In many cases jobbers coming into the market this week have asked for prompt shipment on material purchased, and many refiners reported a great lack of interest in future business. The jobber does not appear to be sold on the idea that the refinery market will hold its own over the next few weeks, and quotations by refiners of 10¼ cents Friday for U. S. Motor for delivery over May were known to have been refused by the trade.

One of the larger refiners and marketers was offered by another refiner a sizeable quantity of U S. Motor at 10 cents per gallon for shipment over May, but he has not accepted the offer so far, as he had found no buyer with whom a part or all of this material could be placed at a profit, and was not willing to purchase it for his own account on the speculation that he might later move it to advantage.

Although the general level of the spot market had settled to around 10¼ to 10½ cents, a few refiners continued to ask 10¾ cents. One refiner quoted 11 cents, and reported a satisfactory enough volume of business to warrant his maintaining that price. The majority of sales to jobbers late in the week appeared to have been around 10½ cents for prompt or reasonably prompt delivery.

Two export purchases of high gravity gasoline reduced further the small amount of stocks refiners have recently held. The Atlantic Refining Co. purchased 1,000,000 gallons of 64-66, 375 end point gasoline in Oklahoma and north Texas, for the bulk of which it is understood to have paid between 12½ and 12¾ cents. Cosden & Co. sold to the Carson Petroleum Co. for prompt shipment to the Gulf for export, 750,000 gallons of 60-62 400 end point gasoline, at a reported price of 11½ cents.

The heaviest runs to stills in any one week this year were made in the week ended April 17, when daily throughput of 118 Mid-Continent refiners averaged 317,465 barrels, an increase of 27,095 barrels per day over the preceding week. The highest previous daily average was 307,036 barrels, reported by the same 118 refineries in the week ended March 27.

Notwithstanding this heavy increase in throughput, which was shared in by each of the five reporting states, gasoline stocks remained practically stationary, declining 202,804 gallons to 82,085,670 gallons, or 19 days' supply at the current rate of shipment. However, it must be kept in mind that movement on the purchases by the Standard of New Jersey must have aided materially in holding down stocks. Gasoline shipments totaled 30,700,119 gallons, an increase of 1,831,411 gallons over the previous week.

Higher gravity gasolines remained in much better shape than U. S. Motor. Domestic demand for these grades, it is true, has been quiet with the majority of refiners, but exporters have taken enough material to prevent accumulation, and the situation has been rather a seller's than a buyer's advantage. The 60-62, 400 end point has been held at from 11½ to 11¾ cents. For domestic use, 64-66, 375 end point has moved at as low as 12½ cents to the jobber, but refiners were demanding 13 cents for this material with export specifications. One refiner quoted 12¼ cents for the 60-62, 400 end point and 13½ for the 64-66, 375 end point.

Natural Gasolines Advance

Natural gasoline manufacturers who had material free to offer on the spot market this week, were benefitted handsomely. Marketers in several instances were forced to cover on material they had sold ahead, and while there was no shortage of Grade A, considerable shopping was required to find Grade B and C. Each day's sales on what goods was available, seemed to be at ¼ cent advance. On Saturday Grade A was held at from 10 to 10¼ cents, Grade B at 9¼ to 9½ cents and Grade C at 9 to 9¼ cents with sales of odd cars at 9¼ cents. Naturals have advanced further than any other product, and a review of prices of two weeks ago shows that Grade A was moving at 9 cents, Grade B at 8 cents and Grade C at 7 to 7¼ cents.

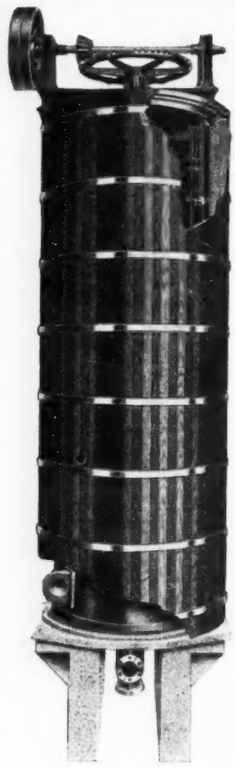
Kerosene has shown little change over several weeks. One refiner just about covered the price situation in a few words when he said, "They don't fall any lower, but we can't push them any higher." The 41-43 water white has moved largely to the jobber at around 4¼ cents, with some refiners securing higher prices, and the 42-44 water white has brought 4½ cents generally,

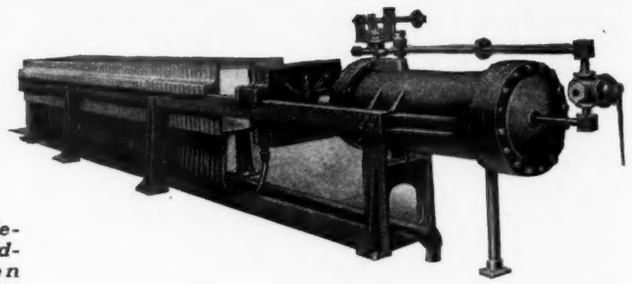
(Continued on page 109)

All prices and market information printed herein have been gathered by the staff of National Petroleum News from reliable sources and so far as can be ascertained thoroughly represent the going market as defined for each product on the date given for those particular prices. Both buyers and sellers have been checked in the gathering of this information and actual sales studied.

These prices and this information are subject at all times to correction for errors. Anyone having knowledge of any facts which would indicate anything different from the information which is given, is especially urged to send in those facts to the head office of National Petroleum News at once, or take them up with the nearest representative. All such facts will be promptly and thoroughly investigated.

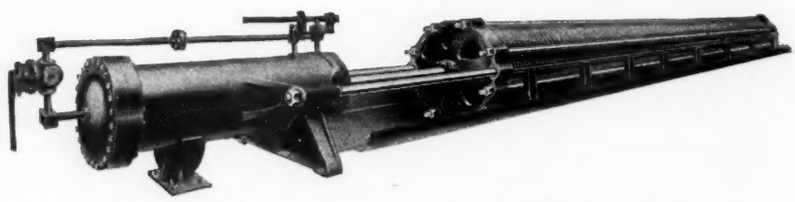
The staff of National Petroleum News is cognizant of the fact that this market information has come to have a high standing in the industry. It wants to not only maintain that standing, but to improve it and to that end, invites the co-operation of the entire oil industry.





Above, at right: Bethlehem (Moore) Wax Moulding Press, with open gutter. At left: Bethlehem (Moore) Single-Unit Type Distillate Chilling Machine.

Below: Bethlehem (Moore) 48" Hydraulic Filter Press. This press is substantially built and will stand up under continuous, severe service.



We install complete plants or furnish separate units

You know in advance

INSTALLATIONS of wax plant machinery are large and represent a considerable investment. For that reason, it is all the more vital that the refiner install only wax plant equipment that he knows in advance can meet his requirements.

Bethlehem (Moore) Equipment for extracting paraffine wax from distillate was developed and marketed forty years ago.

Since then, hundreds of refiners have adopted it. Many of the largest and most progressive firms use it, and re-order it whenever they need additional equipment.

In fact, during the last twenty years over one-half the output of Bethlehem (Moore) Equipment was purchased by refiners who already used that equipment and who knew, through their own every-day experience, what it could do.

The foregoing facts are a sound indication of the kind of service you can expect from Bethlehem (Moore) Equipment.

BETHLEHEM SHIPBUILDING CORPORATION, LTD., BETHLEHEM, PA.
GENERAL SALES OFFICES: 25 BROADWAY, NEW YORK CITY
Wax Plant Equipment Works: Moore Plant, Elizabeth, N. J.
Formerly Samuel L. Moore & Sons Corporation

BETHLEHEM
(*MOORE*)
WAX PLANT EQUIPMENT

Refinery Markets on Light Oils and Lubricants

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas, California

GASOLINE AND NAPHTHA

PENNSYLVANIA	Prices Apr. 27	Prices Apr. 20	Prices Apr. 13
52-54 Naphtha	12⅝-12¾	12¾-13	-12¾
54-56 Naphtha	-13	12¾-13	12¾-13
58-60 Gasoline	13 -13¼	13¼-13⅜	13 -13¼
60-62 Straight-run gasoline	13¾-14¼	13¾-14¼	13½-14¼
62-64 Straight-run gasoline	14¼-14¾	14¼-14¾	14 -14¾
64-66 Straight-run gasoline	14¾-15	14⅝-15	14½-15¼
68-70 Straight-run gas. 350 E.P	15¼-15¾	15⅝-16	15¾-16
68-70 Straight-run gas. 305-320 E.P.	17½-18	-18	-18
70-72 Straight-run gas. 300-305 E.P.	-19	-19	-19
OKLAHOMA			
48-50 450 E. P. naphtha	9¼-10	9¼-10	9¼- 9½
50-52 450 E. P. naphtha	9¼-10	9¼-10	9¼- 9½
56-58 450 E. P. gasoline	9⅞-10	-10¼	9¾- 9⅞
58-60 U.S. Motor 437E.P.131i.b.p.	10¼-10½	10½-10¾	9½-10
60-62 400 E. P. gasoline	11½-11¾	11⅝-11¾	11 -11¼
64-66 375 E. P. gasoline	12½-13	12⅝-12¾	12 -12¼
68-70 350 E. P. gasoline	13 -13¼	13 -13¼	-12¾
NORTH TEXAS			
48-52 450 E. P. naphtha	9¼-10	9¼-10	9¼- 9½
56-58 450 E. P. gasoline	9¾-10	10 -10¼	9¼- 9½
58-60 450 E. P. gasoline	-10	-10¼	9¼- 9½
58-60 U. S. Motor gasoline	-10¼	10¼-10¾	9½-10
60-62 400 E. P. gasoline	11¼-11½	11⅛-11¾	11 -11¼
64-66 390 E. P. gasoline	12¾-13	12¼-12⅝	11¾-12
64-66 375 E. P. gasoline	13 -13¼	12⅝-12¾	12 -12¼
68-70 350 E. P. gasoline	-13¼	13¼-13⅜	-12¾
NORTH LOUISIANA			
58-60 450 E. P. gasoline	10½-10¾	10¼-10½	10 -10¼
58-60 437 U. S. Motor gasoline	10¾-11	10⅝-10¾	10¼-10½
64-66 375 E. P. gasoline	12¾-13	12¾-13	12¾-13
ARKANSAS			
58-60 450 E. P. gasoline	10½-10¾	10¾-11	-10
58-60 U. S. Motor gasoline	10¾-11	11 -11¼	-10¼
64-66 375 E. P. gasoline	13¼-13½	13 -13¼	13 -13¼
CALIFORNIA			
54-56 U. S. Motor gasoline	-11	-11	-11
42-45 Engine distillate, 445-480E.P.	7½- 9½	7½- 9½	7½- 9½

Note: This is without the 2-cent state tax included in the price of California refiners for shipments within the state.

NEW ENGLAND

(F. O. B. Boston and Fall River)

U. S. Motor gasoline	-13¾	-13⅞	-13¾

NATURAL GASOLINE

OKLAHOMA			
Grade Double A	-10	9¾-10	- 9
Grade A	-10	9¾-10	- 9
Grade Double B	- 9½	- 9	- 8
Grade B	- 9½	- 9	- 8
Grade C	- 9¼	- 8¼	- 7

NOTE—Specifications adopted by Ass'n of Nat. Gaso. Manufacturers:
Grade Double A—80-87.9 gravity, 90% recovery, not over 375 E. P.
Grade A—72-79.9 gravity, 90% recovery, not over 375 E. P.
Grade Double B—84-92 gravity, 85% recovery, not over 375 E. P.
Grade B—76-83.9 gravity, 85% recovery, not over 375 E. P.
Grade C—80-90 gravity, 78% recovery, not over 375 E. P.

NORTH TEXAS			
*Grade Double A	-10	9¾-10	- 9
*Grade A	-10	9¾-10	- 9
*Grade Double B	- 9½	- 9	- 8
*Grade B	- 9½	- 9	- 8
Grade C	- 9¼	- 8½	7 - 7¼

*F. O. B. Breckenridge.

CALIFORNIA			
73-78 375 E. P.	12¼-13½	12¼-13½	13 -13½
OKLAHOMA NATURAL GASOLINE—BLENDS			
64-66 435-440 E. P.	-10	10 -10¼	- 9½
NORTH TEXAS			
64-66 435-440 E. P.	-10	10¼-10½	9¾- 9½
PENNSYLVANIA			
68-70 Grav. 437 E. P.	13 -13¼	13¼-13⅜	-13¼
64-66 Grav. 437 E. P.	13 -13¼	13¼-13⅜	-13¼
60-62 Grav. 437 E. P.	13 -13¼	13¼-13⅜	-13¼
68-70 Grav. 420 E. P.	-14	-14	-13¾
68-70 Grav. 400 E. P.	14 -14¼	14¼-14⅜	-14

BURNING OILS

PENNSYLVANIA			
45 Water White Kerosene	6¼- 6½	6½- 6¾	6½- 6¾
46 Water White Kerosene	- 7	7¼- 7½	7⅜- 7½
47 Water White Kerosene	7⅜- 7¾	7¾- 8	7¾- 8
300 Burning Oil	- 7⅜	- 7½	- 7½
OKLAHOMA			
40-42 Prime White Distillate	3½- 3¾	3½- 3¾	3½- 3¾
41-43 Water White Kerosene	4 - 4¼	4⅛- 4¼	4 - 4¼
42-44 Water White Kerosene	4⅜- 4½	4¼- 4½	4¼- 4½
NORTH TEXAS			
41-43 Water White Kerosene	- 4	4 - 4⅛	4 - 4¼
42-44 Water White Kerosene	4⅛- 4¼	4⅛- 4¼	4⅛- 4⅜
NORTH LOUISIANA			
41-43 Water White Kerosene	- 4¾	4½- 4¾	4¾- 5
ARKANSAS			
41-43 Water White Kerosene	- 4¾	4¾- 5	4¾- 5
42-44 Water White Kerosene	4¾- 5	5 - 5¼	5 - 5¼
CALIFORNIA			
40-42 Water White Kerosene	7½- 8	7½- 8	7½- 8
NEW ENGLAND			
(F. O. B. Boston and Fall River)			
40-43 Water White Kerosene	- 7¼	- 7	- 7⅛

NEUTRAL OILS

PENNSYLVANIA	Prices Apr. 27	Prices Apr. 20	Prices Apr. 13
(Viscosity at 70°F.)			
220 Vis. No. 3 Assoc. Filt.	26 -27	-25½	25¾-26
200 Vis. No. 3 Assoc. Filt.	-23	-23	23¾-24
180 Vis. No. 3 Assoc. Filt.	-21	-21	21¾-22
150 Vis. No. 3 Assoc. Filt.	18¾-19	-19	19¾-20
(Non-Viscous)			
34 Grav. 350-360 Flash	7¾- 8	7¾- 8¼	7¾- 8¼
36 Miners Neutrals 300-305 Flash	7¼- 7½	7¼- 7½	7¼- 7½
OKLAHOMA			
(Viscosity at 100°F.)			
70 Vis. No. 2½-3 color	8 - 8½	8 - 8½	8 - 8½
100 Vis. No. 2 color	7 - 9	7 - 9	7 - 9
100 Vis. No. 2½-3 color	7 - 8½	7 - 8½	7 - 8½
150 Vis. No. 3 color	10¾-11	10¾-11	10¾-11
150 Vis. No. 4 color	10½-10¾	10½-10¾	10½-10¾
180 Vis. No. 3 color	11¾-11½	11¾-11½	11¾-11½
180 Vis. No. 4 color	11 -11¼	11 -11¼	11 -11¼
180 Vis. No. 5 color	10 -11	10 -11	10 -11
200 Vis. No. 3 color	11½-13	11½-13	11½-13
200 Vis. No. 4 color	12 -12¼	12 -12¼	12 -12¼
200 Vis. No. 5 color	11 -12	11 -12	11 -12
220 Vis. No. 3 color	14¾-15	14¾-15	14¾-15
220 Vis. No. 4 color	14¼-14½	14¼-14½	14¼-14½
220 Vis. No. 5 color	13 -14	13 -14	13 -14
240 Vis. No. 3 color	16 -16½	16 -16½	16 -16½
240 Vis. No. 4 color	15¾-16	15¾-16	15¾-16
240 Vis. No. 5 color	15 -15½	15 -15½	15 -15½
280 Vis. No. 3 color	17¾-18	17¾-18	17¾-18
280 Vis. No. 4 color	16¾-17	16¾-17	16¾-17
280 Vis. No. 5 color	15¾-16	15¾-16	15¾-16
300 Vis. No. 5-6 color	19¼-19½	19¼-19½	19¼-19½
GULF COASTAL			
(Viscosity at 100°F; cold test 0)			
100 Vis. No. 2 Color Unfilt. Pale	9 - 9½	9 - 9½	10 -10½
200 Vis. No. 3 Color Unfilt. Pale	13½-14	14 -14½	14½-15
300 Vis. No. 3 Color Unfilt. Pale	16 -16½	16 -16½	17 -18
500 Vis. No.3½ Color Unfilt.Pale	18 -18½	18 -18½	19 -20
750 Vis. No. 4 Color Unfilt. Pale	23 -23½	23 -23½	24 -24½
200 Vis. No. 5½ Color Red Oil	12 -12½	12 -12½	13 -13½
300 Vis. No. 5½ Color Red Oil	14 -14½	14 -14½	15 -15½
500 Vis. No. 6 Color Red Oil	16 -16½	15½-16	16½-17½
750 Vis. No. 6 Color Red Oil	20 -21	20 -21	21 -22
CALIFORNIA			
(Viscosity at 100°F.)			
100 Vis. No. 2 color	13½-14½	13½-14½	13½-14½
100 Vis. No. 3 color	9 -10	9 -10	9 -10
200 Vis. No. 3 color	14½-15½	14½-15½	14½-15½
300 Vis. No. 3 color	14 -16	14 -16	14 -16
450 Vis. No. 3½ color	19½-20½	19½-20½	19½-20½
550 Vis. No. 3 color	21½-22½	21½-22½	21½-22½
600 Vis. No. 3½ color	23½-24½	23½-24½	23½-24½
100 Vis. No. 5 color	8 - 9	8 - 9	8 - 9
200 Vis. No. 5 color	13½-14½	13½-14½	13½-14½
300 Vis. No. 5 color	14 -15	14 -15	14 -15
400 Vis. No. 5 color	16 -17	16 -17	16 -17
500 Vis. No. 5 color	17 -18	17 -18	17 -18
600 Vis. No. 6 color	18 -19	18 -19	18 -19
700 Vis. No. 7 color	19½-20½	19½-20½	19½-20½

CYLINDER STOCKS

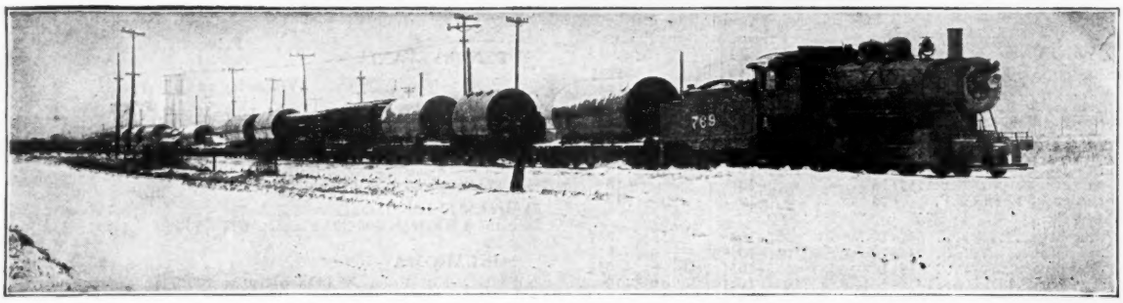
OKLAHOMA			
190-200 Vis. at 210° Bright Stock	31 -36	31 -36	31 -36
150-160 Vis. at 210° Bright Stock	28 -32	28 -32	28 -32
600 E Stock, 140-150 Vis. @ 210°	15 -19½	18½-24	18½-24
600 Steam Refined Olive Green	9 -11	11 -12½	11 -12½
600 Steam Refined Dark Green	6½- 8½	7½-10	7½-10
Black Oil	5¼- 5½	5¼- 5½	5¼- 5½
PENNSYLVANIA			
(1-inch Immersion Test)			
600 Steam Refined	-17	-18	18 -19
635 Steam Refined	23 -23½	-24	23 -25
650 Steam Refined	24½-25	-26	25½-27
600 Flash	28 -29	-29	28½-30
600 Warren E	23½-24	24 -24½	24½-25
600 Oil City E	22½-23	23 -23½	23½-24
600 Filtered D	28½-29	28½-29	-29
Cold Test Stocks (bright filtered)	37 -39	37 -39	37 -39
Cold Test Stock (dark filtered)	35 -36	35 -36	35 -37
Black Oil	7½- 8	7½- 8	7½- 7¾

(Note—Prices of total immersion test goods average 1 to 2 cents per gallon higher.)

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

A Trainload *of* Station Equipment

Bound For Distant Points



ONE DAY'S SHIPMENT — IN SUB-ZERO WEATHER

On New Year's Day the train above, laden with station tanks, pumps, steel supports truck tanks, and fittings, was pulled from the Leader yards. Today that same equipment is scattered from one end of the country to the other. Two cars went to Massachusetts, one to Utah, four to Louisiana and Arkansas, another to Tennessee. The remainder were evenly distributed thruout the central west.

A steady volume of business the year round is one of the reasons that LEADER can build Oil Equipment so economically and so well.

LEADER IRON WORKS :: Decatur, Illinois

2112 NORTH JASPER ST.

More Than A Truck Tank

It is Certified Oil Transportation and It Carries ALL the Oil

When you buy Good Trucks, equip them with Real Tanks. A Brown Certified Tank fills the bill. More Exact Fit, Long Life, No Repair Bill, Good Appearance

BROWN SHEET IRON AND STEEL CO.

Tanks, Storage Equipment, Pumps, Oil Barrels. ***Complete Outfits.***

1001 Berry Ave. **ST. PAUL, Minn.**

LICENSED MANUFACTURERS OF VAN TILBURG RECTIFYING PROCESS

Refinery Markets on Wax and Heavy Oil Products

Pennsylvania, Oklahoma, North and South Texas, Louisiana, Arkansas, California

WAX

PENNSYLVANIA	Prices Apr. 27	Prices Apr. 20	Prices Apr. 13
(Per Pound New York)			
122-124 White Crude Scale.	– 5	– 5	4¾– 4⅞
124-126 White Crude Scale.	5 – 5⅛	5 – 5⅛	– 4⅞
OKLAHOMA			
(Per Pound Group 3)			
124-126 White Crude Scale.	– 4¾	– 4¾	– 4⅞
CALIFORNIA			
White Crude Scale.....	7½– 8	7½– 8	7½– 8

FUEL OIL

PENNSYLVANIA			
36-40 Fuel Oil.....	– 5½	– 5½	5½– 5¾
30-34 Fuel Oil.....	– 5	5 – 5¼	– 5¼
28-30 Fuel Oil.....	4⅞– 5	– 5	– 5
OKLAHOMA			
38-40 Straw distillate.....	3⅛– 3¼	– 3¼	3¼– 3½
36-38 Straw distillate.....	– 3⅛	3⅛– 3¼	3¼– 3⅜
32-36 Gas oil.....	2⅞– 3	2⅞– 3⅛	3 – 3⅛
26-30 Fuel oil (Bbl.).....	1.02½–1.05	1.07½–1.10	1.10 –1.12½
24-26 Fuel oil (Bbl.).....	.95 –1.00	1.02½–1.05	1.07½–1.10
24-26 Fuel oil (Buyers' cars)	.95 –1.00	1.02½–1.05	1.07½–1.10
20-22 Fuel oil (Bbl.).....	– .95	1.00 –1.02½	–1.05
50-60 Asphaltic content road oil.....	–1.25	1.25 –1.30	1.25 –1.30

NORTH TEXAS	Prices Apr. 27	Prices Apr. 20	Prices Apr. 13
36-40 Straw Distillate.....	3⅛– 3¼	3¼– 3⅜	3¼– 3⅜
32-36 Gas Oil (Gal.).....	2⅞– 3	– 3	– 3
24-26 Fuel, per bbl.....	95 – .97½	1.10 –1.15	1.10 –1.15
GULF COASTAL			
Fuel.....	1.70 –1.80	1.75 –1.80	2.10 –2.15
Gas Oil.....	5¼– 5½	5¼– 5⅜	5½– 5¾
NORTH LOUISIANA			
32-36 Gas Oil (Gal.).....	3¼– 3½	– 3¼	3¼– 3⅜
18-22 Fuel Oil (Bbl.).....	90 – 95	1.00 –1.05	1.10 –1.15
ARKANSAS			
32-36 Gas Oil.....	3¼– 3⅜	3¼– 3½	– 3¼
18-22 Refinery Fuel Oil (Bbl.).....		1.00–1.05	–1.05
SmackoverCrudeFuel(Bbl.)	75– .80	.90– .95	1.05 –1.10
Road Oil.....	– 3¼	– 3½	– 3¼
CALIFORNIA*			
14-18 Fuel Oil (Bbl.).....	1.60	1.60	1.60
14-18 Bunker Oil (Bbl.)...	1.60	1.60	1.60
24-30 Gas Oil (Bbl.).....	1.85	1.85	1.85
27 + Diesel Oil (Bbl.)....	1.85	1.85	1.85
NEW ENGLAND (F. O. B. Boston and Fall River)			
30-32 gas oil (gal.).....	– 5¾	– 6	– 6
Fuel Oil (Bunker C) bbl...	–1.90	–1.95	–1.90

*Prices at southern California points. Prices at San Francisco 5c per bbl. higher.

Above prices are f. o. b. refinery in tank car. They are the prices at which the bulk of the products on the open market move. Whoever has knowledge of any open market prices on any considerable quantity of goods differing from the foregoing, will favor us with this information.

(Continued from page 105

with a few refiners receiving 4¾ cents. Demand appeared to be only fair.

Gas oil has been quiet, with prevailing prices ranging from 2⅞ to 3 cents, and odd cars going to marketers at 2¾ cents for prompt shipment.

Fuel oil is considerably weaker. Buyers did not appear willing to pay over $1 for 24-26 gravity Friday and Saturday, and some material went as low as 95 cents for prompt shipment. For May shipment 24-26 has been offered as low as 90 cents, but buyers are slow to buy future material, as they look for easier fuel markets this summer.

Demand for lubricating oils was only fair with most refiners, and a few price adjustments were made. Wax was steady. Refiners ideas were around 4¾ cents or higher. Sales were made at 4¾ cents.

Gasoline Steady in Chicago Market; Smackover Crude Weakens Fuel

CHICAGO, April 25

CONSIDERING that the end of the month has come when the carload marketers begin to unload gasoline prices were steady on Friday and Saturday. The last few days of every month always form a period of weakness in the Chicago resale market. The reason is that numerous carload marketers have material bought over the month and must give shipping instructions to their refiners before it ends.

Gasoline prices are a little higher now than on April 1 so relatively few marketers were caught long on material. The prevailing quotations in Chicago were higher than in Group 3, representing a normal resale commission, nearly all this week. Sacrifice material was coming out of the Mid-Continent in small volume. Late this week the price of 10½ cents for U. S. Motor gasoline to the trade, could be shaded slightly but rush orders, nevertheless, demanded a premium. So 10¼ to 10½ cents is a conservative range for the Chicago market.

Kerosene prices were 4¼ to 4½ cents this week, depending largely on the grade of material sold. The market was only fairly active and bidding was not strong. Plowing has only begun in this territory and was halted this week in several of the western states by rain, nevertheless most rural jobbers have their supplies for the present.

Light fuel oils were face to face with a dead market. Stove distillate was selling around 3¼ cents and gas oil around 3 cents. A range of 2⅞ to 3⅜ cents covered the whole market on both products. Even fuel oil slipped down the scale to where $1 a barrel was about all a resale agent could expect to get and Smackover crude fuel could be had for 80 cents. Untreated Smackover fuel is 70 cents per barrel or less.

GLOBE, ARIZ.—The Rio Grande Oil Co. is operating several large trucks and trailers for delivering their products to the outlying districts of the Salt River Valley and adjacent mining towns. These trucks are a source of admiration to many who see them on the road, according to C. L. Fauber, manager here for the company.

Two More States Levy Gasoline Taxes

CHICAGO, April 25.—A gasoline tax for road purposes of 2 cents a gallon became effective in Iowa on April 16. The effectiveness of the tax and the corresponding advance in the tank wagon price of gasoline in Iowa should have been in the tank wagon table of the April 22 issue of National Petroleum News but was left out by mistake.

The Minnesota legislature this week passed a 2-cent gasoline tax law to raise money for road purposes. It becomes effective on Friday, May 1. One of the chief topics of discussion at the annual meeting of the Minnesota Petroleum Association in Minneapolis on April 22 and 23 was the manner in which the tax law is to be administered. It is quite complicated but the oil men do not have to concern themselves with the exemptions.

The tank wagon structure in South Dakota is in trouble again although in the tank wagon market table in this issue it shows only at Huron. A few weeks ago when the Group 3 price was at its lowest the state-owned stations in South Dakota reduced the retail price of gasoline accordingly. At some points where these stations are situated, local dealers met the cut and Standard followed by establishing a special price. The exact history of the price war is lacking but the service station price at Huron has been 20 cents including a 3-cent tax since April 11.

The cut-price condition in Chicago and vicinity has not improved much since April 19 when a local tank wagon reduction of 1 cent was made. Prices are still being cut locally, and in southern Illinois markets are disturbed at several points.

Volume of Trade in Pennsylvania is High; Gasoline at Peak

CLEVELAND, April 27

VOLUME of products moved from Pennsylvania refiners continues good. This month will be a record for April gasoline trade. Neutrals demand has been fair to good and cylinder stocks new business has been good in the aggregate although the number of large orders has been small. Demand for light fuel oil has increased because of the increased requirements of cracking plants. Kerosene is only fair and prices have eased off in the last week.

The hot wave of last week caused a late June draft on gasoline stocks. Refiners have been able to move gasoline as fast as they can make it but prices have lacked strength because of market conditions in the southwest.

Motoring is possible now on dirt as well as paved roads. The drying out of dirt roads has greatly widened the use of motor vehicles until trade is comparable with that usually normal not earlier than June.

Pennsylvania refiners are expecting a large demand for motor oils soon. Lubricating oil business has been steady and some items have been cleared from the market. Two refiners report they are sold up on neutrals. One said he was oversold and in the last few days bought up the supply of another refiner who was quoting ¼ cent under what was regarded as the market. Some high cold test neutrals were still available today at concessions from the market.

Export demand for cylinder stocks is light. Domestic demand is fair. Consequently there are reports of slowness in the cylinder stocks market. Export business is usually the balance between slack and boom trade in the Pennsylvania stocks. Paraffin wax is firm.

Kentucky

Gasoline demand is good in central Kentucky but prices for the heavy grades are lower than a week ago. Heavy oils are steady. Prices at central Kentucky plants today were: 58-60 gasoline, 13 cents; 60-62, 13¼; 64-66, 14, and 68-70, 15. Kerosene, 42-44 water white, 7½ cents; 34-38 gas oil, 5, and 24-26 fuel oil 4.

Week's Price Changes Tank Wagon Market

Gasoline Changes

Standard of Kentucky.—T.w. and s.s. prices at Louisville were shown incorrectly in the April 22 issue of National Petroleum News. The 1 cent reduction which was made on April 17 through the Standard of Kentucky territory, but only in part of Kentucky, did not include Louisville. On April 21, t.w. was cut 1 cent at Louisville to 21 cents, but s.s. price remained unchanged at 24 cents. Covington was another point not included in the April 17 cut.

Standard of Indiana.—State tax of 2 cents in Iowa became effective April 16, and the 2 cent increase in gasoline prices should have been shown in the April 22 issue. Prices are corrected in this week's table.

T.w. and s.s. at Huron, S. D. have been 18 and 20 cents respectively, including 3 cent tax, since April 11.

A 2 cent tax will go into effect in Minnesota on May 1.

Standard of Ohio.—Omission of reference to the tax in Ohio from the tank wagon table in the April 22 issue of National Petroleum News, was because it was not until Tuesday, April 21 that the attorney-general held that the tax law became effective when passed on Saturday, April 18, and that it was not subject to referendum. All oil companies raised their gasoline prices 2 cents on Sunday, April 19, anticipating the tax being effective at once. Prices in this week's issue show the 2 cent tax in Ohio, and the 2 cent advance shown in the issue of April 22 was to cover the tax.

Canadian.—Gasoline prices in Quebec should have shown a 3 cent tax in the issue of April 22, instead of 2 cents.

Benzol Market Steady

NEW YORK, April 27.—Benzol prices were steady on a basis of 22 cents for motor grade in tank cars at the ovens. Leading markets reported comparatively little fresh buying, but the big makers of motor fuel mixtures are taking large quantities on contracts, and consumption is increasing steadily.

The recent reduction in gasoline tank wagon prices, has failed to weaken spot benzol, and offerings for immediate shipment are still small. Many of the large distributors say that they have enough business on their books to keep them active for some time to come. Export inquiries are more numerous but sellers are reluctant to accept large foreign orders, at the present time.

Gulf Coast Lube Demand Good

HOUSTON, April 27.—Demand for Gulf Coastal lubricants is good considering the season. Jobbers had expected the recent 25-cent reduction in price of Gulf Coastal crude oils and when it came, they started placing orders which had been hanging fire for some time. Three hundred and 500 viscosity oils are moving best but there is a good demand for 750 viscosity oil.

Fair and Warmer Week, Weather Man Says

CHICAGO, April 27.—In that portion of the Chicago forecast district which is east of the Mississippi river the week ending May 2 will be warm and mostly fair. Temperatures will be normal or above and only ocassional showers are forecast. These will come late in the week. West of the Mississippi river temperatures may run slightly below normal late in the week and in the lower Missouri river valley the rainfall is expected to be heavier than elsewhere but not excessively heavy in any part.

The Ohio river valley had fair, dry weather last week. But hardly a day passed that rain did not fall in some spot around the Great Lakes. All states that border Canada, had plenty of rain last week and those that constitute the western half of Standard Oil Co. of Indiana territory had too much to be conducive of motoring. In fact Minnesota jobbers at the Minneapolis convention complained that mud hindered traffic.

The west was not the only region to get excessive rainfall, the weather records show. In fact the southeastern states were about the only ones exempted. Massachusetts, Montana, Michigan and Arkansas each had rain exceeding 1 inch last week.

Oklahoma Jobbers Meet: Elect New Officers

OKLAHOMA CITY, April 23.—A quarterly meeting of Oklahoma Oil Jobbers Assoc., was held on April 16 at the Huckins Hotel, this city, according to C. M. Kinney, secretary.

Officers elected at the January meeting include L. A. Warren, manager of the Eason Oil Co., Enid, Okla., and formerly manager of the retail marketing department of the Marland Refining Co., president; Hugo Hoevel, division manager of the Cities Service Oil Co., Oklahoma City, vice president; and Mr. Kinney, who was re-elected for the third term as secretary.

Mr. Hoevel was recently promoted to manager of the division comprising Oklahoma, Missouri, Kansas and Arkansas, he having formerly had charge of his company in Oklahoma, with headquarters at Oklahoma City. He will soon move his offices to Tulsa.

NEWARK, O.—A. P. Hess, president of the Licking Oil Co., and owner and general manager of the A. P. Hess Co., automobile sales agency, is adding 552,000 gallons to his oil storage capacity, which will give him 1,000,000 gallon storage capacity.

CUBA CITY, WIS.—The Cuba Oil Co. has moved its offices into its warehouse, is installing a 45,000 gallon storage plant at Galena, Wis., and has added another pump to its service station, making three pumps in all.

Tank Wagon, Service Station Markets for Gasoline and Kerosene
in United States Territories and Canada

BELOW are given in cents a gallon, the tank wagon price of gasoline without the special taxes levied against motor fuels by many states, the amount of the state taxes, the total tank wagon price, with tax added in and the service station or retail price of gasoline as quoted by the Standard Oil Companies in their various marketing territories. The right hand column is the tank wagon price of kerosene. By tank wagon price is meant the price to resale agents or dealers.

These prices in Effect April 27, 1925

S.O. NEW JERSEY TERRITORY

	Gasoline T.W.	Tax	Total	S.S.	Oil T.W.
Atlantic City, N. J.	17	0	17	*	12.5
Newark, N. J.	17	0	17	19	12.5
Annapolis, Md.	18	2	20	*	12
Baltimore, Md.	17	2	19	21	11
Cumberland, Md.	18	2	20	22	12
Washington, D. C.	17	2	19	21	12
Danville, Va.	18	3	21	*	13
Norfolk, Va.	18	3	21	23	13
Richmond, Va.	18	3	21	23	13
Roanoke, Va.	18	3	21	23	13
Petersburg, Va.	18	3	21	*	13
Charleston, W. Va.	17	2	19	21	13
Clarksburg, W. Va.	18	2	20	22	13
Keyser, W. Va.	18	2	20	*	13
Parkersburg, W. Va.	17	2	19	21	13
Wheeling, W. Va.	17	2	19	21	13
Williamsburg, W. Va.	18	2	20	*	13
Charlotte, N. C.	18	4	22	24	14
Hickory, N. C.	18	4	22	*	14
High Point, N. C.	18	4	22	*	14
Mt. Airy, N. C.	18	4	22	*	14
Salisbury, N. C.	18	4	22	*	14
Charleston, S. C.	18.5	5	23.5	25.5	14.5
Columbia, S. C.	18.5	5	23.5	25.5	14.5

*Dealers set own prices. S. O. New Jersey does not operate station.

S. O. NEW YORK

*New York City	20	0	20	22	13
Albany, N. Y.	20	0	20	22	13
Buffalo, N. Y.	20	0	20	23	13
Rochester, N. Y.	†20	0	†20	†24	13
Syracuse, N. Y.	20	0	20	22	12
Boston, Mass.	20	0	20	24	11
Augusta, Me.	20	1	21	24.5	13
Manchester, N. H.	20	2	22	25.5	13
Burlington, Vt.	20	2	22	25.5	13

*In steel barrels.

†At Rochester only, as far as is known, Standard sells two grades of gasoline, the above price applying to its Socony grade, and another grade being sold 2c below this price.

ATLANTIC REFINING

Pittsburgh, Pa.	19	0	19	*24	14
Philadelphia, Pa.	19	0	19	*24	14
Allentown, Pa.	19	0	19	*24	14
Erie, Pa.	19	0	19	*24	14
Scranton, Pa.	19	0	19	*24	14
Altoona, Pa.	19	0	19	*24	14
Dover, Del.	19	2	21	24	14
Wilmington, Del.	19	2	21	24	14
Providence, R. I.	20	0	20	24	13
Springfield, Mass.	20	0	20	24	13
Worcester, Mass.	20	0	20	24	13
Hartford, Conn.	20	1	21	25	12
New Haven, Conn.	20	1	21	25	13
Boston, Mass.	20	0	20	24	11

*Contains 2-cent tax collected by retail dealer and paid by him directly to state.

S. O. KENTUCKY

Lexington, Ky.	18	3	21	24	14
Louisville, Ky.	18	3	21	24	12
Covington, Ky.	17	3	20	23	14
Clarksdale, Miss.	18	3	21	24	12
Jackson, Miss.	18	3	21	24	10
Natchez, Miss.	17.5	3	20.5	23.5	11.5
Vicksburg, Miss.	17.5	3	20.5	23.5	11.5
Birmingham, Ala.	19	2	21	24	14.5
Mobile, Ala.	18	2	20	23	12.5
Montgomery, Ala*	20	2	22	25	15.5
Atlanta, Ga.	20	3	23	26	13
Augusta, Ga.	20	3	23	26	15
Macon, Ga.	20	3	23	26	14.5
Savannah, Ga.	18	3	21	24	13
Jacksonville, Fla.	18	3	21	24	13
Miami, Fla.	20	3	23	26	14.5
Tampa, Fla.	18	3	21	24	13
Pensacola, Fla.	18	3	21	24	13.5

*Local privilege tax of 1 cent on gasoline and ½ cent on kerosene at Montgomery included.

S. O. INDIANA

	Gasoline T.W.	Tax	Total	S.S.	Oil T.W.
Chicago, Ill.	†18	0	†18	20	12
Decatur, Ill.	18.2	0	18.2	20.2	12.5
E. St. Louis, Ill.	17.1	0	17.1	19.35	11.6
Joliet, Ill.	18.4	0	18.4	20.4	12.7
Peoria, Ill.	18.2	0	18.2	20.2	12.5
Quincy, Ill.	18.2	0	18.2	20.2	12.5
Indianapolis, Ind.	18.2	3	21.2	23.2	12.7
Evansville, Ind.	18	3	21	23	12.5
South Bend, Ind.	18.4	3	21.4	23.4	12.9
Detroit, Mich.	18.8	2	20.8	22.8	13.2
Grand Rapids, Mich.	18.7	2	20.7	22.7	13.1
Saginaw, Mich.	18.9	2	20.9	22.9	13.3
Madison, Wis.	18.3	2	20.3	22.3	12.5
Milwaukee, Wis.	18.1	2	20.1	22.1	12.3
La Crosse, Wis.	19.2	2	21.2	23.2	13.4
Minneapolis, Minn.	19.2	0	19.2	21.2	13.6
Duluth, Minn.	19.5	0	19.5	21.5	13.6
Mankato, Minn.	19.1	0	19.1	21.1	13.4
Des Moines, Iowa	18.5	2	20.5	22.5	12.9
Davenport, Iowa	18.5	2	20.5	22.5	12.9
Sioux City, Iowa	18	2	20	22	12.5
Mason City, Ia.	18.5	2	20.5	22.5	12.9
St. Louis, Mo.	**17.6	2	19.6	21.9	12
Kansas City, Mo.	††18.9	2	20.9	22.9	11.3
St. Joseph, Mo.	**18	2	20	22	11.9
Fargo, N. D.	19.9	1	20.9	22.9	15.6
Grand Forks, N. D.	20.1	1	21.1	23.1	15.9
Minot, N. D.	20.9	1	21.9	23.9	15.6
Pierre, S. D.	20	3	23	*	14.1
Huron, S. D.	15	3	18	20	14.1
Wichita, Kans.	17.8	0	17.8	19.8	11.8
Bartlesville, Okla.	16.9	3	19.9	21.9	10.9

†Dumps of 100 or more gallons at 17c per gallon.
*S. O. Indiana does not operate station
**Includes city tax of ½c.
††Includes city tax of 1c.

S. O. NEBRASKA

Crawford, Neb.	19	2	21	*	13.25
Omaha, Neb.	16	2	18	20	12.5
McCook	19.75	2	21.75	23.75	14
Norfolk	18.75	2	20.75	22.75	13
North Platte	19.75	2	21.75	23.75	13.75
Scotts Bluff	19.25	2	21.25	23.25	13.25

*Standard has no service station here.

CONTINENTAL OIL

Denver, Colo.	19	2	21	23	14.5
Pueblo, Colo.	19	2	21	23	14.5
Casper, Wyo.	19	2½	21.5	23.5	13
Cheyenne, Wyo.	20.5	2½	23	25	14.5
Butte, Mont.	21	2	23	23	16
Helena, Mont.	23	2	25	27	17
Salt Lake City, Utah	20.5	3½	24	26	18
Boise, Ida.	21.5	3	24.5	26.5	20
Albuquerque, N. M.	23.5	3	26.5	29.5	16.5

S. O. CALIFORNIA

Phoenix, Ariz.	20	3	23	26	21.5
Los Angeles, Cal.	13.5	2	15.5	18.5	15.5
Fresno, Cal.	15.5	2	17.5	20.5	17.5
San Francisco, Cal.	15	2	17	20	15.5
Reno, Nev.	18.5	4	22.5	25.5	19
Portland, Ore.	15	3	18	21	16.5
Seattle, Wash.	15	2	17	20	16.5
Spokane, Wash.	19	2	21	24	20.5
Tacoma, Wash.	15	2	17	20	16.5

S. O. LOUISIANA

Camden, Ark.	17	4	21	23	12
Little Rock, Ark.	17	4	21	23	10
West Helena, Ark.	17	4	21	23	11
Alexandria, La.	16.5	2	18.5	20.5	12
Baton Rouge, La.	15	2	17	19	10.5
Lake Charles, La.	16.5	2	18.5	20.5	12
New Orleans, La.	16.5	2	18.5	20.5	11
Shreveport, La.	16.5	2	18.5	20.5	11
Bristol, Tenn.	18	3	21	23	12.5
Chattanooga, Tenn.	17.5	3	20.5	22.5	13.5
Knoxville, Tenn.	18.5	3	21.5	23.5	14
Nashville, Tenn.	17.5	3	20.5	22.5	12.5
Memphis, Tenn.	16	3	19	21	13

S. O. OHIO

	Gasoline T.W	Tax	Total	S.S.	Oil T.W.
All Ohio points	18.5	2	20.5	22.5	15

MAGNOLIA PETROLEUM

Muskogee, Okla.	15.5	3	18.5	21.5	12
Oklahoma City	16.5	3	19.5	22.5	12
Tulsa, Okla.	15.5	3	18.5	21.5	11
Fort Smith, Ark.	17	4	21	24	12
Little Rock, Ark.	17	4	21	23	10
Texarkana, Ark.	18	4	22	25	12
Dallas, Tex.	16	1	17	21	12
El Paso, Tex.	17	1	18	21	13
Fort Worth, Tex.	16	1	17	21	12
Houston, Tex.	16	1	17	21	12
San Antonio, Tex.	14	1	15	18	12

*Within city of Texarkana, Ark., the state tax on gasoline is 1c per gal. conforming with the Texas state tax. In Texarkana district outside of the city, the 4c state tax applies.

V. M. & P. NAPHTHA

(Changes ordinarily occur coincident with gasoline)

	V.M.&P. Naphtha	Oleum Spirits
Chicago	21	19
Detroit	22.7	20.2
Milwaukee	21.7	19.2
Minneapolis	23	20.5
St. Louis	20.9	18.4
New York	19½	....
Cleveland	19	....

CANADA

(Per Imperial Gallon, which is 1.2 American Gallons)
Prices in effect April 27, 1925

	Gasoline T.W.	Tax	Total	S.S.	Oil T.W.
ONTARIO					
Toronto	23.5	0	23.5	27	20
Ottawa	24.5	0	24.5	28	21
Cochrane	28.5	0	28.5	32	24.5
Ft. William	26.5	0	26.5	30	22.5
MANITOBA					
Winnipeg	26.5	3	29.5	33	22.5
SASKATCHEWAN					
Regina	29.5	0	29.5	33	25.5
ALBERTA					
Edmonton	31.5	2	33.5	37	27.5
Calgary	30.5	2	32.5	36	26.5
BRITISH COLUMBIA					
Vancouver	21	3	24	28	23
QUEBEC					
Montreal	23.5	3	26.5	30	20
Quebec City	25.5	3	28.5	32	22
NEW BRUNSWICK					
St. John	26.5	0	26.5	30	20
Moncton	28.5	0	28.5	32	22
NOVA SCOTIA					
Halifax	26.5	0	26.5	30	23
Sydney	28.5	0	28.5	32	25
PRINCE EDWARD ISLAND					
Charlottetown	26.5	2	28.5	30	23

Note: In districts surrounding these points 1c additional is added to city price.

Complete Export Markets

New York **Gulf Coast** **California**

Gasoline More Active in New York; Lubricating Oils are Dull

NEW YORK, April 27
By Special Correspondent

A LEADING Philadelphia oil company booked two mixed cargoes for May shipment to one of its subsidiaries in France. One of these cargoes called for 42,000 barrels of prime and water white kerosene and U. S. Motor and 64-66 gravity gasoline while the other was for 50,000 barrels of the same. The prices paid were withheld, but reports have it that U. S. Motor brought from 11¾ to 12 cents and the 64-66 15 cents while prime and water sold at around 5½ and 6½ cents a gallon.

A small broker sold a cargo of 42,000 barrels of gasoline and kerosene mixed for May-June shipment to France and while prices were not disclosed it is understood that they were at practically the same level as the two cargoes. A leading refiner will supply this oil. Another broker was in the market for 2,000,000 gallons of U. S. Motor and was bidding 12 cents a gallon for this for May shipment abroad. The refiner was asking 12½ cents. This deal was still on at the close of the week.

U. S. Motor in tank cars at local refineries was held at 12½ cents and delivered to the trade in tank cars at 13½ cents. Cased gasoline has been very flat the past few days and no sales worthy of mention have come to light. Most of the buying was for immediate shipment to the West Coast of Africa and South America. The majority of orders heard of were for 500 cases or less. The reports of a stronger market in the Gulf, tended to better sentiment up here, and some refiners are looking for better prices this week.

Kerosene was flat the greater part of the week. Stocks are large and prices are tending lower. No straight bulk sales were heard of, and foreign buyers are more reluctant to purchase ahead. Water white was quoted at 7 to 7¼ cents a gallon in tank cars at the refineries, while the inside price might have been shaded ¼ cent a gallon on a firm bid for a large quantity. The price in tank cars delivered to the trade was easy at 8¼ cents a gallon. Jobbing demand is very light and spasmodic. There was an inquiry from China for 35,000 cases of prime and water white for May shipment but this deal is still hanging fire. The local price in tank wagons to store is steady at 13 cents a gallon, regardless of the weakness in bulk kerosene.

Bunker oil is tending lower and leading refiners are quoting Grade C at $1.80 a barrel at the refinery. The movement has been more spasmodic of late, and little or no fresh buying was heard of. The diesel oil demand is also lagging and talk of impending cuts in crude oil have tended to discourage contract buying in most of the fuel oils. The price in bulk at local refineries was quoted at $2.30 a barrel, refinery.

Gas oil remained weak but failed to show any further declines and leading refiners are quoting 36-40 in bulk at the refineries at 5¾ cents a gallon while 28-34 is held at 5½ cents a gallon. The demand has been very spasmodic and prices are softening. Export inquiries have been for very small quantities. No bulk sales or inquiries were heard of.

The lubricants were weak. Pennsylvania 600 s.r. cylinder stock in barrels, New York was quoted at 25½ to 26½ cents a gallon, with refiners more inclined to press sales. The demand from abroad is strictly hand-to-mouth. Spindle oil was a dull, featureless affair while paraffin oils showed little or no change.

The waxes were a shade firmer. Export buying is still very light but there were four inquiries for 50 tons apiece of white crude scale in the market, and while buyers are reluctant to purchase ahead refiners are far more confident than a week ago, and underlying conditions are steadily improving. Refined waxes are dull but steady.

Petrolatums are holding steady under a routine domestic demand. Export buyers are inquiring in a slightly more active way. The call for medicinal oils is not quite as good as anticipated.

French Buyers Active at Gulf; Order Two Mixed Cargoes

By Special Correspondent

NEW ORLEANS, April 27.—French buyers were again active, and two of the leading Independents booked a cargo of gasoline and kerosene apiece. One of these called for 56,000 barrels, for May-June shipment and the other for 42,000 barrels for May shipment, from the Gulf. The U. S. Motor is reported to have brought 12 cents; 64-66 gravity 15 cents, water white 6½ cents and prime white 5¾ cents.

A large United Kingdom buyer was inquiring for a cargo of 50,000 barrels of U. S. Motor and 64 gravity gasoline, but the buyer was entertaining ideas of about ½ cent a gallon below refiners. Heavy buying by the Standard Oil Co. of New Jersey in the Mid-Continent field a short time ago was held largely responsible for the upturn in prices, in this market, which resulted in a more spirited export demand both here and in the New York section.

A German buyer was also negotiating for a mixed cargo of 42,000 barrels for May-June shipment but this deal is still pending. Stocks of U. S. Motor gasoline are moderate but 64-66 is rather scarce and a leading refiner is demanding 15¾ cents for this grade although Independents were quoting 15 to 15½ cents. For 60-62, 300 e. p. the asking price was 13½ to 14 cents according to the seller.

Cased gasoline was dull, the movement being almost entirely against previously placed contracts, and on consignment. A large Japanese buyer was still inquiring for 50,000 cases for June shipment, but nothing materialized. A South American buyer was inquiring for 25,000 cases of gasoline and a leading Independent expects to book this order some time this week.

Kerosene was featureless. There was an inquiry in the market for a cargo of 25,000 cases for May-June shipment to China but this did not materialize. Water white in bulk was quoted at 6½ cents a gallon while most refiners were asking 5¾ cents for prime white. A United Kingdom buyer was inquiring around for a cargo of 25,000 barrels, but was entertaining ideas about ¼ cent a gallon below the prices mentioned above.

Bunker oil was a flat affair at $1.55 a barrel at the refinery. Some factors were still asking $1.70 for Mexican grade C bunker oil but no business was reported at this figure. Export demand

N. Y. Domestic Market

The following light oil, gas and fuel oil prices are F. O. B. New York refineries, being products made from Domestic (including California) and Mexican Crudes.

	Apr. 27	Apr. 20
U. S. Motor Gasoline, Tank Cars Delivered	-13½	13½-14
U. S. Motor Gasoline, Tank Cars Bayonne	12½-13	12½-13
Kerosene, 45-150 W. W. Tank, Cars Del'd	-.08¼	-.08¼
Grade C Bunker, f.o.b. N.Y.	1.80	1.80
Diesel Oil f.o.b. Refinery	2.30	2.30
Gas Oil, 36-40, Bulk, Refinery	-05¾	-06
Gas Oil, 28-34	-05½	-05½

for bunker oil has been slow of late. Mexican crude oil was unchanged at $1.40 a barrel, Tampico, taxes to be added.

The movement in gas oil was negligible. Galician gas oil is still underselling domestic on the other side, according to latest reports, and foreign interest in the local gas oil market was largely of an academic nature. For 26-28 in bulk the price was 5½ cents while 32 plus dark oil was available at 5¼ cents on a bid.

The lubricants are softer. Export demand for zero cold test oils has been very light, and the movement into foreign channels is mainly against old contracts. A large German buyer was inquiring for 25,000 barrels, but failed to place the order. French buyers are showing little or no interest in the zero cold test oils.

The waxes were firmer. There is a more active export demand from the other side regardless of the fact that Polish waxes are still underselling domestic. Spain has been looking around for three lots of 25 tons of white crude scale each, but no actual purchases have been reported.

Medicinal oils are dull and unchanged. The tendency is easier. Petrolatums are quiet but steady.

MT. PLEASANT, IA.—The service station which is being built here by the Standard Oil Co. of Indiana will be completed by May 2, it is understood.

Packing for Export

Oldest, Largest independent, export packing plant.

Port of New Orleans.

BARRELS
tight or slack
DRUMS
Storage

Lubricating oil, Petrolatum, Wax, Kerosene, Gasoline.

P. W. Babcock

Office:	*Plant:*
24 Stone Street	Westwego
New York City	New Orleans

New York Export Market

Prices below are averages of actual sales by local exporting Agencies

GASOLINE	Apr. 27	Apr. 20
U. S. Motor, Bulk, Ref.	12½-13	12½-13
KEROSENE		
45-150 W. W. Bulk Ref.	-07¼	-07¼
GAS OIL		
36-40, Bulk Ref.	-5¾	-05¾
28-34, Bulk Ref.	-5¾	-05½
BUNKER OIL		
Grade C, Ref.	1.80	-1.80
Diesel Oil Ref.	2.30	2.30-2.35

LUBRICATING OILS

The following prices are cooperage basis f. o. b. New York, products being manufactured by inland refineries.

CYLINDER OILS BBLS.				
Penna. Filtered D 600		-34		-34
Penna. Filtered E 600	31	-32	31	-32
Unfiltered 600 s. r.	25½-26½		26	-27
Unfiltered 650 s. r.	32½-33¼		32½-33¼	
600 flash s. r.		-39		-39
Western 600 s. r.	13	-14	13	-14
Bloomless 30-31 grav.		-25		-25
RED PARAFFIN (bbls.)				
300 vis. at 100°F.	24	-25	24	-25
250 vis. at 100°F.		-23		-23
175 vis. at 100°F.		-23		-23
High Viscosity Paraffin		-31		-31
.885 s. g. pale 100 vis. at 100°F	14½-15		14½-15	
SPINDLE (bbls.)				
200 vis. at 100°F. Pale		-25¼		-25¼
180 Pale		-23½		-23½
150 Pale		-21		-21
BLACK OIL (bbls.)				
25-30 cold test	14	-15½	14	-15½
15 cold test	15	-15½	15	-15½

MEDICINAL OILS (Cooperage Basis) (Penna. Stocks)	Apr. 27	Apr. 20
Domestic.875-.885s.g.drums	1.00-1.08	1.00-1.08
Domestic.865-.870s.g.drums	75 -80	75- 80
Russian.885-.890s.g.325-330 vis. drums	1.25	1.25
WAXES (Penna. Stocks) (F. A. S. Carload Lots)		
WHITE CRUDE SCALE		
122-124 A. m. p.	04¼	04¼-04¾
124-126 A. m. p.	04⅞	-04¾
MATCH		
105-108 A. m. p.	05¾-06	nominal
111-115 A. m. p.	nominal	nominal
FULLY REFINED		
120-122 A. m. p.	-05¾	-05¾
123-125 A. m. p.	-05⅞	-05⅞
125-127 A. m. p.	-06¼	06 -06¼
128-130 A. m. p.	06¼-06½	06¼-06¾
130-132 A. m. p.	-06¾	-06¾
133-135 A. m. p.	-07¼	-07¼
SEMI REFINED		
122-124 A. m. p.	-04¾	-04¾
YELLOW CRUDE SCALE		
124-126 A. m. p.	-04¾	-04¼
PETROLATUMS (Penna. Stocks)		
Dark Green	02¾	02¾
Veterinary	03¾	03¾
Light Amber	03¾	03¾
Dark Amber	03⅞	03⅞
Cream	07¼	07¼
Lily White	10	10
Snow White	12½	12½

N. Y. Export Quotations

Furnished by big exporting oil companies. No actual sales. Record for statistical purposes only.

Illuminating Oils
Standard Oil of New Jersey

	Apr. 27	Apr. 20
Bulk, gal., Bayonne	6.50	6.50
Barrels, gal., Bayonne, cargo	13.50	13.50
Cases, gal., Bayonne	16.90	16.90

Prices for water white oil (150 test) are 1 cent higher than those for standard white.

Gasoline-Naphtha
(Cents per Gallon)

U. S. Motor, dead bulk	15.00 15.00
U. S. Motor, cases	29.15 29.15
Export Naphtha bulk	17.75 17.75
*62-63 deg. bulk	19.00 19.00
66-68 deg. bulk	20.50 20.50

*Grade changed from 64-66 to 62-63 Jan. 9.

Tide Water Oil Company
(f. o. b. Bayonne)

58-59 deg. bulk	16.00 16.00
58-59 deg. cases	29.65 29.65
Export grade, U. S. Motor Specifications bulk	15.00 15.00
63-65 deg. bulk	19.00 19.00
68-72 deg. bulk	21.50 21.50

	Bulk	Barrels	Cases
Standard white 110	6.50	13.50	16.90
Water white 150	7.50	14.50	17.90

The Texas Company

Gasoline, cases	29.15 29.15

Kerosene	Bulk	Barrels	Cases
Standard White	6.50	13.50	16.90
Prime White	7.00	14.00	17.40
Water White	7.50	14.50	17.90

Gulf Export Market

(Actual Sales Prices)
Gasoline

	Apr. 27	Apr. 20
U. S. Motor, Bulk	-.12	-.11½
60-62 gr. 400 e. p.	-.13½	-.13
64-66, Bulk	15 -.15¼	-.14½
U. S. Motor, Cases (cargo lots)	2.40	2.40
64-66. Cases (cargo lots).	2.55	2.55
KEROSENE		
Water White, bulk	-.06½	-.06¾
Prime White, bulk	-.05¾	-.05¾
Water White, cases (cargo lots)	1.70	1.70
Prime White, cases (cargo lots)	1.60	1.60
GAS AND BUNKER OIL		
26-28, gravity, bulk	-05½	-05½
32 plus, bulk. Dark	-05¼	-05¼
Grade C, Bunker oil	-1.55	-1.55
MEXICAN CRUDE AND BUNKER OILS		
*Heavy, f.o.b. Tampico, Taxes to be added	1.40	1.40
Mexican Grade C Bunker oil F. O. B. Tampico Taxes paid	1.65	1.65
Mexican C, Bunker oil New Orleans	1.70	1.70

Lubricating Oils

SOUTH TEXAS
(Viscosity at 100°F; cold test 0)
(Tanker, F. O. B. Houston)

	Apr. 27	Apr. 20
100 Vis. No. 2 Unfilt. Pale	9	9
150 Vis. No. 2½ Unfilt. Pale	11	11
200 Vis. No. 3 Unfilt. Pale	13½	13½
300 Vis. No. 3 Unfilt. Pale	16½	16½
500 Vis. No. 3½ Unfilt. Pale	18½	18½
750 Vis. No. 4 Unfilt. Pale	23½	23½
200 Vis. No. 5½ Red Oil	12	12
300 Vis. No. 5½ Red Oil	14½	14½
500 Vis. No. 6 Red Oil	16½	16½
750 Vis. No. 6 Red Oil	21	21

*Nominal

Gasoline is Weaker in California

LOS ANGELES, April 25.—The retail gasoline market in the Los Angeles area has slipped somewhat from the fairly strong position which it gained immediately after the recent price war of the Independents. The discount coupon book, which was the cause of the price war, is again appearing among some of the minor Independents.

Quotations on natural gas gasoline are spotty with a weaker tendency. One of the largest purchasers, the Shell Co., recently withdrew from buying and left something of a surplus on the market. However, 4 cents under the retail gasoline market without taxes is about the lowest price while long time contracts are made at 3 cents under.

Fair volumes of fuel oil continue to be moved and prices of these oils are steady. Kerosene and lubes are soft but as there is no conspicuous amount of these oils in storage the situation is not at this time considered critical.

The cutting of gasoline prices and crude oil in the east has depressed the Pacific coast market in several respects.

Marland Shifts Executives

HOUSTON, April 23.—Announcement, was made last week of the retirement of Dr. W. A. J. M. van Waterschoot van der Gracht as president of the Marland Oil Co. of Texas and his return to Ponca City, Okla., where he will be in charge of research work carried on by the parent Marland Oil Co. of Delaware.

F. Park Geyer, member of the executive committee of the Marland of Delaware, who has previously made his headquarters at Ponca City, will be the new president of the Marland of Texas.

Cargoes Clearing From N.Y.

Date	Destination	Product	Quantity
Apr. 10	London	Lubes	209,607 gals.
Apr. 10	London	Kerosene	199,922 gals.
Apr. 10	London	Kerosene	197,045 gals.
Apr. 10	London	Kerosene w.w.	623,195 gals.
Apr. 10	London	Exp. Kerosene	1,335,035 gals.
Apr. 8	Colombo	Kerosene	10,000 cases

Pacific Export Market

(Cargo lots quotations at seaboard, Los Angeles.)

	Apr. 27	Apr. 20
Gasoline, U. S. Motor— 54°—56°	10½-11½	10½-11½
Gasoline—U. S. Motor blends and special cuts	11½-12½	11 -12½
Gas Oil, 24°—30°B per bbl	$1.85	$1.85
Diesel Oil, 27°B-plus per bbl	$1.85	$1.85
Bunker Oil,14°—18°B per bbl	$1.60	$1.60
Fuel Oil,14°—18°B per bbl	$1.60	$1.60
Kerosene, W.W.40°—42° B per gal.,125-150 flash test	05 -06½	05 -06½
Cased Goods		
Gasoline, U. S. Motor	$2.70	$2.70
Kerosene, W.W.40°—42° B per case, flash test 125-150	$1.55-1.65	$1.55-1.65

Crude Oil Prices All Fields

EASTERN FIELDS

	1925 Apr. 27	1924 High	1924 Low	1923 High	1923 Low
Bradford Allegany	$3.40	Jan.30..$4.50	Aug.21..$2.85	Feb.15..$4.25	Nov.13..$2.60
Gaines	3.15	Jan.30.. 4.00	Aug.5... 2.75	Feb.15.. 4.00	Nov.13.. 2.35
Other Penna	3.30				
West Virginia	3.25				
Penna. grade in Ohio	3.15				
Cabell	2.05	Mar.10.. 2.20	Jan.1and Aug.5. 1.45	Feb.15.. 2.76	Nov.13.. 1.20
Corning	1.95	Mar.10.. 2.15	Jan.1... 1.40	Feb.15.. 2.30	Nov.14.. 1.25
Somerset	2.15	Mar.10.. 2.30	Jan.1... 1.40	Feb.15.. 2.55	Nov.13.. 1.15
Somerset Light	2.30	Mar.10.. 2.50	Jan.1... 1.55	Feb.15.. 2.80	Nov.13.. 1.30
Ragland	1.30	Mar.10.. 1.10	Jan.1... .85	Feb.15.. 1.10	July 10.. .75

Somerset oil run prior to Oct. 1, 1923, takes price of 6 cents lower than above quotations.

CENTRAL STATES FIELDS

Wooster	$2.15	Mar.8...$2.15	Jan.1,and Sept.18 $1.40	Feb.19..$2.50	Nov.9...$1.25
Lima	2.23	Mar.8... 2.28	Jan.1... 1.53	Feb.19.. 2.58	Nov.9... 1.45
Indiana	2.03	Mar.8... 2.08	Jan.1... 1.33	Feb.19.. 2.38	Nov.9... 1.23
Princeton	2.02	Mar.8... 2.07	Jan.1... 1.32	Feb.19.. 2.37	Nov.8... 1.22
Illinois	2.02	Mar.8... 2.07	Jan.1... 1.32	Feb.19.. 2.37	Nov.8... 1.22
Plymouth	1.55	Mar.8... 1.45	Jan.1... .70	Feb.19.. 1.75	Nov.9... .60
Canadian Petrolia	2.63	Mar.8... 2.68	Jan.1... 1.93	Feb.19.. 2.98	Nov.9... 1.85

MID-CONTINENT AND NORTH TEXAS FIELDS

Below 30	$1.35	Currie	$2.00
30-32.9	1.55	Mexia	2.00
33-35.9	1.80	Powell	2.00
36-38.9	2.00		
39-41.9	2.25		
42 and above	2.35		

Humble's Prices
Moran Field Texas

Below 30	$1.35	36 and above	$2.00
30-32.9	1.55	Wortham	2.00
33-35.9	1.80	Richland	2.00

Magnolia's Price Schedule
North and North-Central Texas, Okla., and Kan.

Below 28	$1.00	Corsicana, light, Powell, Mexia	$2.00
28-30.9	1.35	Corsicana, heavy	1.00
31-32.9	1.55	Thrall	1.00
33-35.9	1.80	*Magnolia pays $2 and $2.25 respectively for these two grades in Okla. and Kan.	
*36-38.9	1.95		
*39-41.9	2.10		
42 and above	2.35		

NORTH LOUISIANA—ARKANSAS FIELDS

Caddo, 38 degrees and above	$2.05	do 32 to 34.9	1.55
do 35 to 37.9	1.95	De Soto	1.90
do 32 to 34.9	1.85	Crichton	1.70
do below 32	1.70	Bellevue	1.75
Homer, 35 and above	1.80	Smackover 27 and above	1.30
do 33 to 34.9	1.70	do 26-26.9	1.25
do 31 to 32.9	1.60	do 25-25.9	1.20
do below 31	1.45	do 24-24.9	1.10
Haynesville, 33 and above	1.70	do above 24	40
do below 33	1.60	Stephens 26 and above	1.45
El Dorado 33 and above	1.70	do below 26	1.25
do below 33	1.60	Cotton Valley	1.00
Bull Bayou, 38 and above	1.85		
do 35 to 37.9	1.70		

GULF COASTAL FIELDS

	1925 Apr. 27	1924 High	1924 Low	1923 High	1923 Low
Spindletop	$1.75	Apr.1...$2.00	Jan.1 and Sept.17.....$1.25	Mar.15..$1.75	Aug.18..$1.00
Goose Creek "A"	1.75	Apr.1...$2.00	Jan.1 and Sept.17..... 1.25	Mar.15.. 1.75	Aug.18.. 1.00
Goose Creek "B"	1.50	Apr.1... 1.70	Sept.17..... 1.05	Mar.15.. 1.50	Aug.18.. 1.00
Sour Lake	1.75	Apr.1... 2.00	Jan.1 and Sept.17..... 1.25	Mar.15.. 1.75	Aug.18.. 1.00
Humble	1.75	Apr.1... 2.00	Jan.1 and Sept.17..... 1.25	Mar.15.. 1.75	Aug.18.. 1.00
Hull "A"	1.75	Apr.1... 2.00	Jan.1 and Sept.17..... 1.25	Mar.15.. 1.75	Aug.18.. 1.00
Hull "B"	1.50	Apr.1... 1.70	Jan.1 and Sept.17..... 1.00	Mar.15.. 1.30	Jan.1... .80
West Columbia	1.75	Apr.1... 2.00	Jan.1 and Sept.17..... 1.25	Mar.15.. 1.75	Aug.18.. 1.00
Edgerly	1.75	Apr.1... 2.00	Jan.1 and Sept.17..... 1.25	Mar.15.. 1.75	Aug.18.. 1.00
Vinton	1.75	Apr.1... 2.00	Jan.1 and Sept.17..... 1.25	Mar.15.. 1.75	Aug.18.. 1.00
Jennings	1.75	Apr.1... 2.00	Jan.1 and Sept.17..... 1.25	Mar.15.. 1.75	Aug.18.. 1.00
Saratoga	1.75	Apr.1... 2.00	Jan.1 and Sept.17..... 1.25	Mar.15.. 1.75	Aug.18.. 1.00
Orange "A"	1.75	Apr.1... 2.00	Jan.1 and Sept.17..... 1.25		
Orange "B"	1.50	Apr.1... 1.70	Jan.1 and Sept.17..... 1.00		
Pierce Junction "A"	1.75	Apr.1... 2.00	Jan.1 and Sept.17..... 1.25		
Pierce Junction "B"	1.50	Apr.1... 1.70	Jan.1 and Sept.17..... 1.00		

WYOMING FIELDS

Elk Basin	$2.15	Mar.10..$1.65	Jan.1...$ .95	Feb.17..$2.10	Nov.9...$ .95
Grass Creek	2.15	Mar.10.. 1.95	Jan.1... .95	Feb.17.. 2.10	Nov.9... .95
Big Muddy	2.00	Mar.10.. 1.50	Jan. 1... .45	Feb.17.. 1.65	Nov.9... .45
Salt Creek	1.60	Mar.10.. 1.60	Jan.1... .60	Feb.17.. 1.65	Nov.9... .60
Lance Creek	2.15	Mar.10.. 1.90	Jan.1... .90	Feb.17.. 2.10	Nov.9... .80
Rock Creek	2.00	Mar.10.. 1.70	Jan.1... .60	Feb.17.. 1.75	Nov.9... .60
Osage	2.15	Mar.10.. 1.90	Jan.1... .90	Feb.17.. 2.10	Nov.9... .80
Cat Creek, Mont	2.15	Mar.10.. 1.95	Jan.1... .95	Feb.17.. 2.10	Nov.9... .93
Sunburst, Mont	1.20	Mar.10.. 1.05	Jan.1.... 70	Feb.17.. 1.50	June 6.. .70

CALIFORNIA

14-19.9	$1.25	25-25.9	$1.44	30-30.9	$1.64
20-20.9	1.27	26-26.9	1.48	31-31.9	1.68
21-21.9	1.30	27-27.9	1.52	32-32.9	1.72
22-22.9	1.33	28-28.9	1.56	33-33.9	1.76
23-23.9	1.36	29-29.9	1.60	34-34.9	1.80
24-24.9	1.40			35 and above	1.85

ROSECRANS FIELD

36-36.9	$1.99
and for each increase of one full degree above 36° gravity, up to and including 41.9° gravity, 8 cents per barrel additional	
2 and above	$2.40

Eastern Marketer Would Break Sales Record

WORCESTER, MASS., April 23.—A half-page advertisement in a local newspaper announced the opening of a new service station, handling gasoline, oils and accessories, by the Daley Gas Service Co. of this city, of which David F. Daley is head.

On the opening day, April 18, each five-gallon purchaser of gasoline was presented with a U. S. tube patching outfit complete. The opening day was limited to gasoline sales only, with no oiling, greasing or draining of crankcases. This was done in an effort to break the record for gasoline sales for any one day at any individual station, according to the advertisement.

The station is equipped with all modern conveniences, including six Farr hydraulic meters, two compressors, two air and water standards, two greasing and oiling racks, two rest rooms with drinking water and cups, road maps, and other conveniences for patrons.

A. P. I. Figures Show Increase in Stocks

The following is the American Petroleum Institute's summary of the increases or decreases of stocks at refineries covering approximately 62 per cent of the operating capacity of the United States for March.

	Increase Barrels of 42 gallons	Decrease Barrels of 42 gallons
Domestic crude oil	1,518,652	.....
Foreign crude oil	.....	155,802
Oil for re-running	.....	86,878
Gasoline	2,027,280	.....
Kerosene	491,993	.....
Gas and fuel oil	741,629	.....
Lubricating	254,584	.....
Miscellaneous oils	928,940	.....
Total	5,963,078	242,680
Deduct	242,680	.....
Net Increase	5,720,398	

Note.—East of the Rockies there was an indicated increase in gasoline of 2,353,344 barrels and west of the Rockies an indicated decrease of 326,064 barrels, making a net increase of 2,027,280 barrels, for the refineries reporting.

Gasoline consumption in twenty-nine states as indicated by reports made by wholesalers and dealers in various states under provisions of the gasoline tax laws or gasoline inspection laws, totaled for the two months ending with February, 1925, 462,401,713 gallons, compared with 360,125,255 gallons for the corresponding period of 1924, an increase of 102,276,458 gallons or 28.4 per cent. Gasoline consumption in the twenty-nine states for the month of February, 1925, totaled 225,537,148 gallons, compared with 164,263,422 gallons, in February, 1924, an increase of 61,273,726 gallons, or 37.3 per cent. February, 1925, consumption was 225,537,148 gallons, a daily average of 8,054,898 gallons, compared with 236,864,565 gallons, a daily average of 7,640,792 gallons in January, 1925, an increase of 5.4 per cent. Figures are also shown for the District of Columbia for the months of January and February, 1925.

The figures giving the quantity of gasoline sold or offered for sale as reported under various laws, follow: In some cases they are gross figures before deductions allowed for small quantities of gasoline reshipped or sold for other than taxable use, the tax upon which if paid, is subsequently refunded. All figures are subject to revision.

GASOLINE CONSUMPTION BY STATES

	Feb., 1925 Gallons	Feb., 1924 Gallons
Alabama	6,725,645	4,861,040
Arizona	2,103,432	1,787,622
Arkansas	5,403,330	3,108,577
Colorado	6,550,024	5,582,037
Connecticut	5,449,664	4,772,925
Delaware	1,050,295	1,053,790
Florida	13,702,115	9,631,773
Georgia	10,055,223	7,976,415
Idaho	1,364,613	1,121,731
Indiana	18,085,173	11,391,185
Kansas	14,625,250	9,440,700
Kentucky	6,087,471	5,422,392
Louisiana	8,079,856	5,708,134
Maine	736,514	556,860
Minnesota	11,881,250	8,170,200
Mississippi	4,582,476	4,095,351
Missouri	15,685,900	12,898,000
Nevada	543,659	445,646
New Hampshire	779,228	472,261
New Mexico	1,494,323	1,183,300
North Carolina	10,916,490	9,107,533
North Dakota	3,816,409	1,963,224
Oklahoma	12,834,809	7,831,257
Oregon	5,475,150	4,823,776
South Carolina	6,752,314	3,997,790
South Dakota	3,091,458	2,603,669
Texas	31,897,320	19,936,606
Virginia	6,426,259	5,760,435
Washington	9,341,498	8,559,193
Total	225,537,148	164,263,422

Percentage increase February, 1925 over February, 1924 ..... 37.3

Refiners', Compounders' Supplies

Following are the average market prices for the week on materials used by refiners and compounders f. o. b. shipping point as effective this date.

Refiners' Supplies

		Apr. 27	Apr. 20
Soda Ash light 58% bags	cwt.	-$1.38	-$1.38
Silicate of Soda 60 deg. drums	cwt.	- 1.70	- 1.70
Sal Soda wks	cwt.	1.10- 1.25	1.10- 1.25
Caustic Soda 76% solid	cwt.	- 3.10	- 3.10
Chloride of Lime works	cwt.	1.90- 2.10	1.90- 2.10
Sulphuric Acid 60 deg. tank cars f. o. b. shipping point	per ton	9.50-11.00	9.50-11.00

Compounders' Supplies (Open Market)

Vegetable Oils—			
Linseed carloads spot	gal.	- 1.04	- 1.04
April		- 1.04	- 1.04
May-August		- 1.04	- 1.04
Tanks, spot		- .98	- .98
Less carload spot	gal.	- 1.07	- 1.07
Less than 5 bbls. spot		- 1.09	- 1.09
Boiled tank spot		- 1.01	- 1.01
Boiled, carloads spot	gal.	- 1.07	- 1.07
*Soya Bean spot, tanks	lb.	- .12	- .12
Animal Oils—			
English Degras	lb.	-.04¾	-.04¾
Domestic Degras, bbls., carloads	lb.	-.04¾	-.04¾
*Horse	lb.	-.09½	-.09½
Oleic Acid—			
Dist	lb.	-.11¼	-.11¼
Saponified	lb.	-.11¼	-.11¼
Lard Oils—			
Prime			
Winter Strained	1 to 1½ ffa. 40‡45c.t.	lb. .19½	.19½
Extra			
Winter Strained	2 to 4½ ffa. 40/45c.t.	lb. .18¼	.18¼
Extra	4 to 5 ffa. 40/45c.t.	lb. .15½	.15½
Extra No. 1	7 to 10 ffa. 40/50c.t.	lb. .13½	.13½
No. 1	15 to 18 ffa. 40/45c.t.	lb. .13	.13
No. 2	22 to 25 ffa. 40/45c.t.	lb. .12½	.12½
Prime Edible Tallow under 1½ ffa. 40/45c.t. N. Y.		lb. -.10½	-.10½
Tallow acidless		lb. -.13¼	-.13¼
Lard Stearine		lb. -.19	-.19¼
Oleo Stearine		lb. -.12¼	-.12½
Neatsfoot Oil—			
Pure	bbls.-lb.	.14¾	.14¾
Extra	do lb.	.13½	.13½
No. 1	do lb.	.13	.13
Cold pressed		lb. .17¾	.17¾
Fish Oils—			
Menhaden Oil			
Light pressed		gal. -.78	-.78
White		gal. -.83	-.83
Yellow bleached		gal. -.81	-.81
*Herring tank cars coast		gal. -.40	-.40
Whale, extra winter bleached		gal. -.84	-.84
Seal		gal.	Nominal
Naval Stores—			
Turpentine, N. Y.		gal. .96	.93
Turpentine†		gal. .91	.86¼
Rosin, B. N. Y.		Bbl. 7.90	7.95
Rosin F. N. Y.		Bbl. 8.90	8.20
Rosin B†		Bbl. 6.40	6.40
Rosin F†		Bbl. 7.40	6.80
Rosin Oil 1st run		gal. .48	.48
Rosin Oil 2nd run		gal. .51	.51
Pine Tar—			
Kiln Burnt		Bbl. 14.00	14.00
Retort		Bbl. 14.00	14.00

†Savannah, Ga. market
*Nominal.

Chemical Market Firm Linseed Oil Weak

NEW YORK, April 27.—Following is a review of the markets for oils and supplies used in compounding and refining:

Caustic Soda.—Steady contract shipments keeping stocks down. Ground and flaked moving more freely. Prices firm.

Soda Ash.—Demand less active. Prices steady owing to large contract withdrawals. Fairly large offerings, prevent prices from stiffening. Bleaching Powder is very soft and sellers appear anxious to move their stocks before the warm weather sets in. Nobody inclined to buy ahead.

Linseed Oil.—Demand is less active. Prices weak at $1.04, spot-August delivery, carlots. Linoleum, and petroleum interests holding off. Soya bean oil quiet. Imports small. Flaxseed weaker.

Fish Oils.—Held Steady. Crude menhaden still 55 to 60 cents, tank, factory. Light pressed in slightly better demand. Yellow bleached dull. Whale oil flat. Herring oil nominal.

Animal Oils.—Demand slightly better. Stocks moderate. Lard oil moving more freely. Little interest in neatsfoot oil. Tallow oil, marking time. Lard stearine quiet. Degras flat. Little doing in oleo stearine.

Sulfuric Acid.—Quiet, but firm. Stocks small. Fertilizer makers buying heavily.

OIL STOCKS AND FINANCES

California Petroleum Corp. Boosts 1924 Production Over 1923

CLEVELAND, April 27

CALIFORNIA PETROLEUM CORP. in 1924 increased its net production by a half million barrels over the "gusher year" of 1923, it reports in connection with its annual statement to stockholders. Production amounted to 14,914,574 including a 59 per cent interest in the production of the Red Star Petroleum Co. The 1923 production was 14,341,964 barrels. Last year's production, R. L. Peeler, president of the company reports, exceeded any two previous years combined excluding only 1923 production.

Income of the company declined, however, owing to the low prices received for California oil during most of the year. Gross earnings were $17,680,521 as compared with $20,314,981 in 1923 and net profit, after all charges was $2,894,462 as against $6,104,499 in 1923. Net was equivalent to 9.86 per cent on the combined preferred and common stock as against 20.37 per cent in 1923, 12.04 per cent in 1922, and 9.44 per cent in 1921. After payment of 7 per cent in dividends on the common stock, the 7 per cent preferred stocks shares equally with the common. Seven per cent was paid on each class of stock during 1924.

Where Each Dollar Goes

CLEVELAND, April 27

WHERE the oil company's dollar goes is shown graphically by the California Petroleum Corp. in its report to stockholders on 1924 operations. Last year the California company spent 40 cents of each dollar on new property development, drilling and similar items; 25 cents on labor; 13 cents as lessors' royalty; dividends 11 cents; sinking fund 5 cents; bond interest and taxes 3 cents each.

Production Fairly Settled

The California Petroleum Corp's production averaged 40,872 barrels daily throughout 1924. It had 427 wells. The entire state of California produced an average of 628,167 barrels daily from 11,319 wells. The company's production, Mr. Peeler says, seems fairly well established above 36,000 barrels daily. During the year it drilled 107 wells which produced 4,178,964 barrels, and 320 old wells produced 10,369,967 barreis. At the end of the year the company was running 30 strings of tools, 17 on new wells and 13 redrilling old.

The company increased its steel storage facilities during the year 22.7 per cent to 5,549,000 capacity barrels. It also had earthen facilities for 1,063,482 barrels. At the end of the year the company had in storage 4,696,156 barrels of crude, an increase of 928,686 barrels over the year. The company now has 158 miles of pipe line in Los Angeles basin. It owned 4254 acres in fee and had 5807 acres under lease, divided about evenly between the San Joaquin valley and Los Angeles basin fields.

A new topping unit was installed at Watson during the year giving the company a total topping capacity of 12,000 barrels daily.

The balance sheet as of Dec. 31 shows an increase in the property account of $3,000,000. Additions to property really totaled $6,793,000 and property carried at $1,012,841 was abandoned. Net current assets are 3.7 to 1 over current liabilities.

The company and the Standard Oil Co. of New Jersey canceled their contract made in 1923 under which the California company was to sell the Standard a large amount of crude. A new contract covering a part of the California's crude and fuel oil output was signed, it was announced. The New Jersey company also is buying heavily of the California company's tops this year.

Consolidated income accounts of the California Petroleum Corp. for the last five years compare:

	1924	1923	1922	1921	1920
Gross earnings	$17,680,521	$20,314,981	$11,835,759	$ 7,463,675	$ 6,391,061
Operating expenses	7,383,900	6,400,655	4,974,590	3,066,522	2,319,830
Operating income	$10,316,621	$13,914,326	$ 6,861,149	$ 4,397,153	$ 4,071,231
Depreciation, deplet., losses	5,896,561	6,237,916	2,282,562	1,166,420	1,101,570
Tax reserve	350,000	775,000	540,000	564,000	550,000
Interest	592,628	186,619	49,452	51,220	68,870
Sinking fund	582,969	610,293	333,561	197,065	197,421
Net profits	$ 2,894,462	$ 6,104,498	$ 3,655,594	$ 2,418,448	$ 2,153,370
Preferred dividends	836,787	863,550	750,150	715,029	770,439
Common dividends	1,216,390	1,216,390	.....	.....	.....
Surplus	$ 841,285	$ 4,024,558	$ 2,905,444	$ 1,703,419	$ 1,382,931

Consolidated balance sheets as of Dec. 31 for the last five years compare:

ASSETS

	1924	1923	1922	1921	1920
Property*	$48,830,697	$45,904,531	$38,714,144	$32,069,619	$29,916,812
Investments	153,250	100,000	100,000	100,000	100,000
Preferred stock retired	78,005	452,983	208,995	389,633	61,185
Bond sinking fund	187,867	288,291	166,858	54,737	.....
U. S. receiver	.....	.....	.....	.....	1,899,734
Cash	1,116,399	4,302,150	2,007,419	1,689,684	1,296,209
Liberty bonds	.....	.....	.....	848,412	.....
Accounts, notes rec	1,244,104	1,303,373	2,193,472	665,021	625,352
Oil inventories	3,873,497	2,432,185	560,037	259,262	214,784
Other inventories	1,458,802	2,650,994	2,161,557	957,452	976,059
Deferred charges	630,421	727,025	32,696	33,513	82,208
Total	$57,563,043	$58,161,532	$46,145,178	$37,067,333	$35,172,343

LIABILITIES

	1924	1923	1922	1921	1920
Preferred stock	$11,955,100	$12,589,926	$12,989,526	$10,739,526	$10,739,526
Common stocks	†17,377,000	†17,377,005	17,377,005	14,877,005	14,877,005
Stocks of subs	13,351	35,579	64,853	66,948	192,521
Bonds	7,892,600	8,766,100	791,100	852,400	867,300
Notes, accounts payable	997,961	1,640,860	1,610,960	643,272	465,166
Dividends payable	207,814	213,875	220,175	178,667	186,542
Federal tax res., etc	844,719	1,865,610	1,408,354	1,337,755	825,852
Surplus appropriated to redeem pfd. stk. and bonds of subsidiaries	3,196,374	2,613,406	2,003,112	1,669,551	1,472,486
Deferred credits	.....	.....	.....	.....	1,205,928
Capital surplus	2,783,051	2,757,512	3,402,993	3,330,552	3,305,658
Unappropriated surplus	12,295,072	10,301,659	6,277,100	3,371,657	1,034,359
Total	$57,563,043	$58,161,532	$46,145,178	$37,067,333	$35,172,343

*After reserve for depreciation and depletion.
†Par $25.

Transactions In Oil Shares on New York Stock Exchange

1924 High	1924 Low	1925 High	1925 Low	Listed Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Apr. 25 Sales	First	High	Low	Last	Ch'ge
48	25	66¼	48 (sh)	200,000	N.P.	American Republics	.....	.....	.....	.....	.....	.....	.....	.....
54⅝	27½	39½	32 $	56,000,000	$25	Associated Oil	37½cQ	Apr. 25, 25	15,300	33	36¾	33	35	+2
140⅜	78⅝	117½	95½	50,000,000	100	Atlantic Refining	.....	June 16, 24	1,100	101½	105	100½	105	+2¾
118	108	115¾	113½	20,000,000	100	do pfd	$1¾Q	Feb. 2, 25	.....	.....	.....	.....	.....	.....
23½	14	30	21	13,000,000	25	Barnsdall Corp. A	.....	Apr. 30, 21	3,900	22⅝	22½	22	22	+ ⅜
17⅞	10	25	16¼	3,713,270	25	do B	.....	Apr. 30, 21	400	17	17	†16¼	17	—1½
4¾	1	2⅜	⅞ (sh)	150,000	N.P.	Caddo Central O. & R.	.....	.....	.....	.....	.....	.....	.....	.....
29¼	19½	32⅞	23⅞ $	17,377,000	$25	California Petroleum	43¾cQ	Mar. 2, 25	27,800	29¾	30	28¼	28¾	— ⅞
107	92½	116⅜	100	11,955,100	100	do pfd	$1¾Q	Apr. 1, 25	1,500	112	114½	111½	113⅞	+1⅜
65¾	51⅜	65¾	42¾	19,832,000	100	General Asphalt Co	.....	.....	11,800	51¾	51⅞	47½	48⅝	—2⅜
100	71½	100	86½	7,416,000	100	do pfd	$1¾Q	Mar. 2, 25	400	91	91	90½	90½	— ½
45	38¾	57½	42	28,866,650	25	General Petroleum	50cQ	Mar. 16, 25	43,000	50⅜	51¾	49½	50¼	— ⅜
82½	61	85	59	25,000,000	100	Houston Oil Co	.....	.....	6,100	61¼	61⅞	†59	60	—1½
16¼	5¾	33½	13½ (sh)	450,000	N.P.	Independent Oil & Gas	25cQ	Mar. 31, 25	21,100	23¾	25½	22¾	24⅝	+ ½
7⅛	3¾	10⅜	5½ $	7,830,450	10	Indian Refining Co	.....	Dec. 15, 20	400	7½	7½	7⅜	7⅛	— ⅜
75	60	95	77	2,296,400	100	do pfd	.....	Dec. 15, 21	.....	.....	.....	.....	.....	.....
1	¾	1¾	½	1,682,280	$10	Kansas & Gulf Corp	.....	.....	200	½	½	½	½	0
.....	.....	23¾	14¾ (sh)	996,302	N.P.	Louisiana Oil Refining	.....	.....	16,200	16⅝	17½	16¼	17⅛	+ ½
37½	24⅜	35½	25¼ (sh)	330,000	N.P.	Maracaibo Oil	.....	.....	3,500	26¾	27½	26	27½	+1
42	29	46¼	32⅝ (sh)	1,649,566	N.P.	Marland Oil Co	.....	July 1, 23	71,200	36	37½	35	36½	+ ¼
190	190	250	225 $	45,942,800	$100	Mexican Petroleum Co	$3Q	Apr. 20, 25	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	12,000,000	$100	do pfd	$2Q	Apr. 20, 25	.....	.....	.....	.....	.....	.....
23¾	14⅜	22¾	11¾ (sh)	945,989	N.P.	Mexican Seaboard Oil	.....	Nov. 15, 24	10,300	17½	17⅝	16⅜	16½	—1⅜
40¼	22⅝	35⅜	26 (sh)	1,357,800	N.P.	Mid-Continent Petroleum (Cosden)	.....	Aug. 1, 23	16,100	26⅞	28¼	26⅝	27	— ⅜
95	80	90⅜	83 $	6,998,000	$100	do pfd	$1¾Q	Mar. 2, 25	.....	.....	.....	.....	.....	.....
6⅞	1	1⅝	⅝ $	29,800,220	$10	Middle States Oil Corp	.....	July 1, 23	6,200	¾	⅞	¾	¾	— ⅛
58¼	45	65¼	52¼ (sh)	3,500,000	N.P.	Pacific Oil Co	$1S.A.	Jan. 20, 25	32,800	56	57⅜	54½	55⅛	— ⅜
65	44¼	83⅞	64 $	48,292,450	$50	Pan American P. & T	$1.50Q	Apr. 20, 25	11,400	73¾	74	71½	72¾	—1¼
64⅝	41¼	84½	63⅜	89,269,400	50	do Class B	$1.50Q	Apr. 20, 25	82,100	74½	75⅝	71¾	72⅞	—1¼
4⅝	1⅝	5⅝	3 (sh)	198,770	N.P.	Panhandle P. & R	.....	.....	.....	.....	.....	.....	.....	.....
42½	20	60½	43 $	3,855,770	$100	do pfd	.....	July 2, 23	.....	.....	.....	.....	.....	.....
42½	28½	46⅜	36¼ (sh)	1,849,904	N.P.	Phillips Petroleum	50cQ	Apr. 1, 25	33,700	38⅝	40	37⅝	39	+ ¼
4½	1½	3⅝	1¾ $	29,622,925	$25	Pierce Oil Corp	.....	.....	1,500	2	2	1⅞	1⅞	— ⅛
36	20	40	25⅜	15,000,000	100	do pfd	.....	Feb. 1, 22	400	33	33½	33	33½	—2
5¾	4⅜	8¼	5¾ (sh)	2,500,000	N.P.	Pierce Petroleum	.....	.....	10,800	7	7	6½	6½	— ½
43½	22¾	52⅝	22 $	11,467,850	50	Producers & Refiners	.....	Sept. 15, 23	700	23	23	22½	23	+ ¼
47½	42	47⅝	43½	2,845,350	50	do pfd	87½cQ	Feb. 2, 25	300	44½	44½	44½	44½	— ⅝
30¼	20	33¾	25⅜	71,499,850	25	Pure Oil Co	37½cQ	Mar. 2, 25	11,600	26¼	27	25¾	26⅜	+ ⅜
105½	92	106¼	103	13,000,000	100	do 8% pfd	$2Q	Apr. 1, 25	100	103	103	103	103	—2¾
59½	40⅜	57⅜	48¼ (sh)	817,193	13.40	Royal Dutch, N. Y. shares	$3.18⅓	Aug. 12, 24	6,400	48⅜	50¼	48⅜	49½	+ ⅞
42	33	45¾	40⅜ (sh)	113,608	£2	Shell Transport & T	95c	Jan. 24, 25	.....	.....	.....	.....	.....	.....
22½	15¾	28⅜	22½ (sh)	10,000,000	N.P.	Shell Union Oil Corp	25cQ	Mar. 31, 25	24,400	23¾	24¼	23¼	23¼	— ¼
99½	91½	101½	99½ $	20,000,000	$100	do pfd	$1½Q	Feb. 15, 25	400	100½	101	100½	101	0
24	10⅜	26¾	19⅜	7,205,740	10	Simms Petroleum Co	50Q	Jan. 2, 25	10,100	22⅝	23⅜	22	22½	— ½
27⅛	15	24⅞	17 (sh)	4,482,225	N.P.	Sinclair Consolidated	.....	May 31, 24	20,200	18¾	19⅜	18¼	18½	— ⅜
90	75	94⅜	78¾ $	18,541,100	$100	do pfd	$2Q	Feb. 16, 25	600	88½	88¾	88	88¾	+ ¾
29	17¾	30½	21¾	20,856,590	25	Skelly Oil Co	.....	.....	8,400	23	24¾	22⅞	23½	+ ½
68½	55½	67¼	56¾	235,324,250	25	S. O. California	50cQ	Mar. 16, 25	11,900	58⅝	59⅞	58	58¾	+ ⅝
42¼	33	47½	38¾	507,856,025	25	S. O. New Jersey	25cQ	Mar. 16, 25	26,800	41⅝	42⅞	40⅜	41	— ¾
119¾	115¾	119	116¾	199,972,900	100	do pfd	$1¾Q	Mar. 16, 25	1,700	117⅜	118	117⅝	117⅞	+ ⅜
8½	2⅜	6¾	4 (sh)	1,116,268	N.P.	Superior Oil Corp	.....	Dec. 20, 20	3,900	4½	4½	4⅛	4⅛	— ⅛
45⅜	37¾	49	42¾ $	164,450,000	$25	The Texas Co	75cQ	Mar. 31, 25	15,000	44	44	43½	43¾	— ¼
15¼	8	23¾	11½	8,380,340	10	Texas Pacific Coal & Oil	.....	June 30, 23	13,400	13¾	15	13	14	0
151	116¾	152	122	50,442,900	100	Tide Water Oil Co	$1Q	Mar. 31, 25	2,400	130	134¾	130	132⅝	+1⅜
6¼	3¾	5½	3⅞ (sh)	3,232,529	N.P.	Transcontinental Oil Co	.....	.....	9,100	4⅛	4⅛	4	4	— ¼
59	35	43¾	36¼ $	40,480,800	$25	Union Oil of California	45cQ	Feb. 10, 25	7,800	37	37⅜	36¼	36½	— ⅜
132¾	94	128¾	118½	18,115,000	$100	Union Tank Car Co	$1¼W	Mar. 2, 25	500	122½	122½	122	122	—1
116¾	106¼	116¾	113¾	12,000,000	100	do pfd	$1¾Q	Mar. 2, 25	.....	.....	.....	.....	.....	.....
29¾	23¼	31¾	25⅝ (sh)	460,000	N.P.	White Eagle Oil & Ref	50cQ	Apr. 20, 25	2,600	26⅜	26⅜	26	26	— ¼

*New High †New Low xEx-Dividend Total Sales 607,500

Standard Oil Stock Traded In New York Curb Market

1924 High	1924 Low	1925 High	1925 Low	Outstanding Capital	Par Value	Stocks	Div. Rate	Last Paid	Transactions week ended Apr. 24 Sales	First	High	Low	Last	Ch'ge
18¼	14⅜	26⅜	18	£ 3,000,000	£1	Anglo American	45cS.A.	Nov. 15, 24	53,900	23⅞	*26⅛	23⅞	25⅞	+1¾
4⅛	2	4	2⅝ (sh)	500,000	N.P.	Atlantic Lobos	.....	.....	200	2¾	2¾	2¾	2¾	— ⅛
16	5	10¾	6⅞ $	10,000,000	$10	do pfd	.....	.....	.....	.....	.....	.....	.....	.....
165	155	239	206¾	1,000,000	$100	Borne-Scrymser	†$4S.A.	Apr. 15, 24	20	209	209	209	209	.....
85½	51	72	60	10,000,000	50	Buckeye Pipe Line	$1Q	Mar. 14, 25	160	60¾	61	60½	62½	+1¾
52½	47⅜	70	48½	3,000,000	25	Chesebrough Mfg. Co	62½cQ	Mar. 31, 25	100	59	59	59	59	.....
115	112	114	110	1,000,000	100	do pfd	$1¾Q	Mar. 31, 25	.....	.....	.....	.....	.....	.....
.....	.....	31⅝	21⅜	30,208,590	$10	Continental Oil (Maine)	25cQ	Mar. 16, 25	29,400	22⅞	23⅞	22½	23⅝	+ ⅜
20	11¼	15⅜	10¾	1,500,000	25	Crescent Pipe Line	.....	Sept. 15, 23	100	10¾	10¾	†10¾	10¾	.....
149	110¾	150	132	3,000,000	100	Cumberland Pipe Line	$3Q	Mar. 16, 25	300	145	145	143	144	0
105	74	96	78	5,000,000	100	Eureka Pipe Line	$1Q	May 1, 25	40	78½	78½	78	78	0
69¾	52	65	54¼	16,000,000	100	Galena Signal Oil	$1Q	Mar. 31, 25	200	55⅛	55⅛	†54¾	54¼	—1¾
115	100½	105	100	4,000,000	100	do new pfd	$2Q	Mar. 31, 25	10	100½	100½	100½	100½	.....
116	110	111	108	2,000,000	100	do old pfd	$2Q	Mar. 31, 25	10	111	*111	111	111	+1
48¾	34½	49⅞	42½	43,750,000	25	Humble Oil & Ref	50cQ	Apr. 1, 25	11,000	46	48½	46	47⅜	+1⅜
161	120	154½	127	20,000,000	100	Illinois Pipe Line	$6S.A.	Dec. 30, 24	110	145	146	145	145	0
.....	.....	34⅜	27¼	(sh) 6,275,640	N.P.	Imperial New w.i	25c	Mar. 1, 25	8,200	28½	29½	28⅜	29	+1
100	66	84	70	$5,000,000	50	Indiana Pipe Line	$1Q	Feb. 14, 25	20	70¼	70¼	70¼	70¼	—2¼
24¾	16¾	28¾	22¼	(sh) 7,118,138	N.P.	International Petroleum	25c	Nov. 29, 24	25,800	24	25	23⅞	24⅝	+ ⅝
162	122	159	130⅝ $	180,247,100	100	Magnolia Petroleum	1%stk.	Apr. 5, 25	290	133	134	131	132	— ½
25¼	20⅜	25½	22	6,362,500	12½	National Transit	50cQ	Mar. 16, 25	100	22⅛	22⅛	22⅛	22⅛	0
97	54½	79	64¾	5,000,000	100	New York Transit	75cQ	Apr. 15, 25	.....	.....	.....	.....	.....	.....
107½	72	88	81½	4,000,000	100	Northern Pipe Line	$8S.A.	Jan. 1, 25	10	83	83	83	83	0
79½	55	75	62¼	60,000,000	25	Ohio Oil Co	50cQ	Mar. 31, 25	2,800	63¾	64½	63	63½	— ¼
45	27	44½	35¾	10,000,000	25	Penn.-Mex. Fuel	.....	.....	330	38¾	40	38	38	—1
269	193	259½	209	60,000,000	100	Prairie Oil & Gas	$2Q	Jan. 31, 25	.....	.....	.....	.....	.....	.....
54¼	49½	65⅜	50¼	60,000,000	$25	Prairie O. & G. (new)	50cQ	Apr. 30, 25	7,300	53	55½	52¾	54	+1½
111	100	126	106	81,000,000	100	Prairie Pipe Line	$2Q	Apr. 30, 25	1,470	115¾	118	115	117	+1¾
230	175	259	200	4,000,000	100	Solar Refining Co	$5S.A.	Dec. 20, 24	20	215	215	215	215	0
100	80½	103	81	10,000,000	100	Southern Pipe Line Co	$1Q	Mar. 1, 25	30	81⅛	81⅛	81⅛	81⅛	0
171	117	197	139	20,000,000	100	South Penn Oil Co	.....	Sept. 30, 22	880	160½	164½	159	163¼	+4¼
89	68	84	65	3,500,000	100	Southwest Pa. Pipe Lines	$1Q	Apr. 1, 25	10	67½	67½	67½	67½	.....
69⅛	54¼	70	59¾	228,756,258	25	S. O. Indiana	62½cQ	Mar. 16, 25	35,700	61⅜	63¼	61⅜	61⅞	+ ⅜
50½	32½	46	30¾	8,000,000	25	S. O. Kansas	.....	June 16, 24	500	31	31¼	†30¾	31¼	— ¼
121¼	101	124¾	114¾	16,864,434	25	S. O. Kentucky	$1Q	Mar. 31, 25	4,100	115	118½	115	118⅜	+2¾
202	198	270	243	3,000,000	100	S. O. Nebraska	$5S.A.	Dec. 20, 24	70	245	245	243	245	+2
48	37¾	48⅝	41	225,324,650	25	S. O. New York	35cQ	Mar. 16, 25	5,500	41½	42½	41¼	42	+ ½
277½	275	369	338	14,000,000	100	S. O. Ohio	$2½Q	Apr. 1, 25	280	346	358	345	347	+2
136	115	128	117½	7,000,000	100	do pfd	$1¾Q	Mar. 2, 25	10	120	120	120	120	—1
31	20	27	16	1,722,931	25	Swan & Finch	.....	Nov. 1, 19	.....	.....	.....	.....	.....	.....
98½	56½	96¼	80¼	61,523,075	25	Vacuum Oil Co	50cQ	Mar. 20, 25	8,000	87¼	87¼	84⅜	85½	—1⅜
30	25	30½	30	100,000	10	Washington Oil Co	.....	Jan. 31, 22	.....	.....	.....	.....	.....	.....

†Borne Scrymser $2 extra April 15

Cleveland Stock Market

April 24

	Par	Bid	Asked	Last Sale
Canfield Oil Co.,....	$100	111	.....	125
do pfd.....	100	.....	100	95
Fred G. Clark Co....	10	1	4½	4½
National Refin. Co..	25	37⅝	40	37½
do pfd.....	100	.....	.....	.....
Paragon Refin. Co..	25	6¾	.....	7¼
do pfd.....	100	58	60	63

x—Ex dividend

Standard Officials Off to See Mexico

CHICAGO, April 27.—A private car carrying eight officials of the Standard Oil Co. of Indiana and three of the recently organized company handling the new acquisition from the Mexican Petroleum & Transport Co., left Chicago for Tampico about noon on Friday, April 17. This might be called a tour of inspection but in a true sense it is a trip to give the Pan-American organization a chance to meet and shake hands with the new management. The party is composed as follows:

From the Standard of Indiana, Robert W. Stewart, chairman of the board of directors; W. M. Burton, president; vice-presidents, Beaumont Parks, Allan Jackson, E. G. Seubert and John D. Clark; directors E. J. Bullock and R. H. McElroy; and Joe Nevotti, secretary to the chairman. From the Pan-American organization was Fred H. Wickett, chairman of the board; Harold Walker vice-president and J. L. McKeever, assistant to the president.

Four days will be spent in Tampico meeting the organization. A tour of inspection will be held about every day and at least one rousing "pep session" will be staged there. The return trip will be by way of New Orleans and will include a visit to the refinery at Destrehan, La., just a few miles up the river from New Orleans. There probably will be several such meetings as this one while the workings of the two organizations are being brought into mesh.

The first of a series of meetings between officers and directors of the Standard Oil Co. of Indiana and the representatives of the Pan-American organization took place at the Racquet Club in New York City on the evening of April 14. On the part of the new interests that have come into Pan-American affairs there were present Colonel Stewart, Dr. Burton, E. G. Seubert, John D. Clark and R. H. McElroy, officers of the Standard Oil Co., Hunter S. Marston, George Ormsby and Edward F. Hayes members of Blair & Co., Inc., E. R. Tinker, Jr., president of Chase Securities Corp. and Frederick H. Wickett, the new chairman of the board of Pan-American Co., who is also president of the Dixie Oil Co., a subsidiary of the Standard of Indiana operating in the Mid-Continent.

Herbert G. Wylie, the president of the Pan-American company, who had shown a keen interest in arranging this first meeting, was prevented from attending due to illness but his assistants and associates were there in force. They

New York Curb Bonds

Week Ended April 24

	High	Low	Last	Ch'ge
Anglo Amer. 7½s.....	.....	.....	.....	.....
Cities Serv. 7s B.....	164	164	164	—1
do 7s C.....	118	117	117	—2
do 7s D.....	102¼	101	102	0
Galena S. O. 7s.....	105¼	105	105	0
Gen. Petr. 6s.....	101½	101½	101½	— ⅛
Gulf Oil 5s.....	99⅛	99⅛	99⅛	+ ⅛
do 5½s '26.....	100¾	100¾	100¾	— ¾
do 5½s '27.....	101⅜	101⅜	101⅜	0
Pennok Oil 6s.....	100¼	100	100⅛	+ ⅛
Pure Oil 6½s.....	100½	100⅛	100⅛	— ⅛
S. O. N. Y. 6½s.....	107¾	107	107¾	+ ⅝
Sun Oil 5½s.....	96	95½	96	+ ½
Tidal Osage 7s.....	104	103¾	104	+ ¼
Union Oil Calif. 5s....	96⅛	96	96	0
United Oil Prod. 8s....	34⅛	33	33¾	+ ¾
Vacuum Oil 7s.....	106⅛	106	106	.....
Valvoline 7s.....	.....	.....	.....	.....

New York Bonds

Week Ended April 24

	High	Low	Last	Ch'ge
Barnsdall Corp. 8s....	105	104⅞	104⅞	— ⅛
Calif. Petr. sf 6½s....	103⅛	102¾	103⅛	+ ⅛
Empire Gas & Fuel 7½s	104	102⅜	103¾	+ ¾
Humble O. & R. 5½s..	102	101½	101¾	+ ¼
Mid Con. Petr. 6½s...	96½	96⅜	96⅜	+ ⅛
Pan Amer. Pet. & Trans. 6s.....	109¾	107½	109	0
do 7s.....	105½	105¼	105¼	0
Pierce Oil debs 8s.....	105	104⅜	105	+ ½
Prod. & Refrs. 7s.....	.....	.....	.....	.....
Sinclair Con. 7s.....	92¼	91⅞	91⅞	— ⅜
do 6s.....	106¾	104¾	106	—1½
do 6½s.....	88	86	87	— ¾
Sinclair crude 6s.....	100¾	100⅜	100½	— ⅛
Sinclair P. L. sf 5s....	85¼	84⅜	84⅜	0
Skelly Oil 6½s.....	109	107½	108	+ ½
Tide Water Oil 6½s...	103¼	103⅛	103⅛	0
Union Oil Cal. 5s.....	100¼	100⅛	100⅛	— ⅛

New York Curb Market

1924 High	1924 Low	1925 High	1925 Low	Par Value	Stocks	Transactions week ended Apr. 24 Sales	First	High	Low	Last	Ch'ge
.....	.....	7¼	2⅝	....	Amer. Maracaibo	32,600	7	8	6⅞	7¾	+ ⅛
7	4	8⅜	5¼	10	Ark.Nat.Gas.....	800	5½	5½	† 5¼	5⅜	— ⅛
6⅝	2¾	4½	2¾	25c	Carib.Synd.....	13,400	3½	5⅛	3½	4¼	+1
190	132	212	175	100	Cities Service.....	1,240	181	181	175½	179	—8
.....	.....	37	35	....	do new.....	1,800	36⅛	36¼	35¼	35⅝	— ⅛
82¾	67¾	82⅛	80¼	100	do pfd.....	2,400	81⅜	82	81¼	81⅞	— ⅛
7¾	6¼	7¾	7¼	10	do pfd. B.....	400	7½	7½	7¼	7½	0
19	13¾	21¾	17⅝	10	do Bkrs. Sh.....	800	18	18	17⅝	17⅝	— ⅛
10¾	2¾	13¾	8¼	N.P.	Creole Synd.....	13,400	13¼	14⅛	13¼	13⅝	+ ⅛
8	1½	7	4½	N.P.	Derby Oil & Ref..	.....	.....	.....	.....	.....	.....
34¼	17¼	27	23	N.P.	do pfd.....	.....	.....	.....	.....	.....	.....
.60	.12	.25	.18	$5	Federal Oil.....	5,000	.15	.15	.15	.15	+5
.....	.....	3¾	2¾	N.P.	Gilliland v.t.c.....	.....	.....	.....	.....	.....	.....
.60	.15	.27	.15	$10	Glenrock.....	.....	.....	.....	.....	.....	.....
67¾	56	71	63¾	25	Gulf Oil Corp.....	2,700	64⅛	65	64	64¼	0
7	1¾	5⅜	2¾	N.P.	Kirby Petroleum..	800	3⅜	3¾	3⅜	3¾	+ ⅛
6¾	2¼	7¾	5	N.P.	Lago Petroleum...	33,400	6¼	6½	6¼	6⅜	+ ⅛
4⅞	1⅝	4¼	1¾	N.P.	Marland of Mexico	3,400	3⅛	4	3	4	+1
.....	.....	2	1⅛	$1	Mountain & Gulf..	1,600	1½	1½	1½	1½	0
20¾	16	21⅞	18¾	10	Mountain Prod ...	4,400	20½	20⅝	20¼	20⅝	0
14	9½	14⅝	11⅞	5	Mutual Oil ctfs....	.....	.....	.....	.....	.....	.....
6¼	3½	5¾	3⅝	5	New Bradford Oil .	1,500	5¼	5¼	5⅛	5⅛	— ⅛
44	17	24¾	16½	10	New England Fuel.	.....	.....	.....	.....	.....	.....
14	8¼	10	8¼	25	New York Oil.....	.....	.....	.....	.....	.....	.....
33¾	29¾	33¾	31¾	25	Ohio Fuel Corp...	.....	.....	.....	.....	.....	.....
6	.70	1¾	1	N.P.	Peer Oil Corp.....	2,200	1¼	1¼	1	1⅛	— ⅛
18¾	12¼	25	16	10	Pennok Oil.....	1,900	22	22¾	22	22¼	+ ⅛
57¾	53¾	32½	18¾	25	Red Bank Oil.....	900	27	27	25½	25½	— ½
5½	3	9¾	3½	N.P.	Ryan Consolidated	3,800	6¼	6⅞	6⅝	6½	+ ¼
10¾	6	8¾	6½	10	Salt Creek Cons...	100	7½	7½	7½	7½	0
27½	19¾	27⅝	24	10	Salt Creek Prod...	3,500	26	26⅜	25⅞	26	0
2½	.80	2	1	5	Sapulpa Refining..	.....	.....	.....	.....	.....	.....
16¾	6¼	18¾	9½	10	Tidal Osage.....	.....	.....	.....	.....	.....	.....
4⅛	2⅝	4⅞	3⅜	5	Venezuelan Pet ...	11,900	4¼	4¾	4⅜	4½	— ⅛
8½	4⅝	7¾	5⅝	5	Wilcox Oil & Gas..	8,000	5⅞	6	† 5⅝	5¾	— ⅛
13⅞	4¾	7	8¾	N.P.	Woodley Petroleum	700	4¼	5½	4¼	5⅛	+1⅛

Pittsburgh Stock Exchange

1924 High	1924 Low	1925 High	1925 Low	Par Value	Stocks	Transactions Week Ended Apr. 24 Sales	First	High	Low	Last	Ch'ge
7	4	8¾	5¾	$10	Arkansas Nat. Gas..	995	5¾	5¾	5⅜	5½	0
40½	35¾	.....	.....	N.P.	Columbia Gas.....	.....	.....	.....	.....	.....	.....
.....	.....	107¾	105¾	$100	Duquesne Lt.7s pfd.	128	107½	107½	107½	107½	+ ½
30	30	.....	.....	25	Fayette County Gas	.....	.....	.....	.....	.....	.....
33½	26½	40	32¾	25	Lone Star Gas.....	1,590	39	39	38½	39	0
33¾	28½	34½	31	25	Ohio Fuel Corp.....	2,468	31¾	32	31½	31⅝	+ ⅛
16½	11¾	16¾	13	1	Ohio Fuel Oil.....	50	13⅜	13½	13⅜	13½	+ ⅛
28½	22¾	31½	26	25	Oklahoma Nat. Gas.	290	29	29	29	29	+ ⅛
9¾	6	8¾	6¼	5	Pittsburgh O. & G..	10	7	7	7	7	— ⅛
10½	6	8½	6½	10	Salt Creek Cons....	225	7½	7½	7½	7½	0
16¾	8	13¾	8¾	10	Tidal Osage.....	.....	.....	.....	.....	.....	.....
92	92	.....	.....	100	do pfd.....	.....	.....	.....	.....	.....	.....

Pittsburgh Curb Market

1924 High	1924 Low	1925 High	1925 Low	Par Value	Stocks	Transactions Week Ended Apr. 24 Sales	First	High	Low	Last	Ch'ge
2¼	2¼	.....	.....	N.P.	Arkansas Fuel.....	.....	.....	.....	.....	.....	.....
1	.20	1¾	.60	$5	Colombia Synd.....	500	1½	1½	1½	1½	— ⅛
.70	.25	.60	.15	5	Duquesne Oil.....	.....	.....	.....	.....	.....	.....
9½	5½	9	7	10	Forest Oil.....	.....	.....	.....	.....	.....	.....
66¾	57	70	64	25	Gulf Oil Corp.....	500	64	64	64	64	.....
23¾	21	.....	.....	N.P.	International Pet...	.....	.....	.....	.....	.....	.....
4½	4½	.....	.....	N.P.	Lago Petroleum....	.....	.....	.....	.....	.....	.....
6	5	.....	.....	$10	Marshall Oil.....	.....	.....	.....	.....	.....	.....
2⅞	1⅜	2¾	1¾	1	Oklahoma Eastern..	10,400	1⅝	1⅝	1⅜	1⅝	— ⅛
.....	.....	¾	¾	....	do rights.....	.....	.....	.....	.....	.....	.....
.77	.35	.40	.40	10	Omar O. & G.....	.....	.....	.....	.....	.....	.....
8	5½	7	8	5	States Oil.....	.....	.....	.....	.....	.....	.....
14	10	11	9	10	TidalOsagenon-vot'g	.....	.....	.....	.....	.....	.....

•New High †New Low x Ex Dividend

included Paul Harwood, Harold Walker, J. J. Cotter and Frederick Ewing, all of whom are members of the Pan-American directorate and are the active heads of important operating departments. O. D. Bennet, secretary of the company, A. N. Penn, recently promoted from assistant treasurer to treasurer, and J. S. Woods, vice-president and traffic manager, and many other men who are active in Pan-American affairs. There were present also Frederick Kellogg, president of the Pan-American company, and several of his assistants including two of the Mexican counsel of the company.

The principal address of the evening was made by Colonel Stewart who was supported by remarks of the new directors of the Pan-American company in assuring the existing organization that the change in control of the company did not involve any change in operating personnel nor limitation in the opportunity of every Pan-American employee and officer to advance in the company's service, and that the change in control would not bring about any change in the business policy of the company the operations of which under the new management would be conducted as aggressively as in the past. From old Pan-American officers came assurances that service to the company would be just as loyal as under the former management.

Navy Asks Bids on Diesel and Bunker C Oil

By Special Correspondent

WASHINGTON, April 27.—The navy department has asked for tenders to be opened May 12, for supplying grade C bunker oil and Diesel engine oil at Cavite or alternate bids for delivery at Manila or far eastern loading points. The bids are to be for 350,000 barrels of fuel and 18,000 barrels of Diesel oil. The bids are to be for the last half of the current year or, if desired, bids for the whole of the fiscal year beginning on July 1 may be submitted.

Deliveries at Cavite may be into naval storage tanks, at the navy yard, naval station or naval tanker in lots of approximately 60,000 barrels. Alternate delivery at Manila may be specified in lots ranging from 250 to 500 barrels as the minimum up to 40,000 to 75,000 barrels as the maximum. Alternate delivery at far eastern loading points, f.o.b. vessels, tank ship or barge at works or tanks of supplier, in lots of 40,000 or 75,000 may be specified, the bidder to specify the point of loading, bids to be either for six months or a year. The estimate of 350,000 barrels is for a year's supply.

The estimate of 18,000 barrels of Diesel oil is also for a 12 months period, for delivery at Cavite or Manila.

The Oil Industry Exchange

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Attention Western Refiners

Young man with fifteen years practical refining experience and qualified to hold position as assistant superintendent, now wishes position as sales representative for some western refiner where a thorough knowledge of oil is essential. Prefer to locate in Cleveland, Ohio. At present employed. Box 353.

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Wanted—Oil Jobbers, Pump Salesmen and Specialty Salesmen calling on Filling Stations, to take on a side line of dependable Welded, and Riveted and Welded Storage Tanks, on a commission basis.

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Minneapolis, Minn.

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I WILL SELL, pursuant to order of the United States District Court, the oil and gas leases and personal property now jointly owned by the Roxana Petroleum Corporation and the North American Oil & Refining Corporation in the South Bend Oil Field, Young County, Texas. These leases comprise nearly 3600 acres, with 23 producing oil wells, having a present settled production of about 230 barrels per day. Equipment includes all machinery, powers, portable tools. well equipment, tanks, water pumping plant, water and oil pipe lines, tanks, buildings, fencings, etc. Also telephone line running from Graham, Texas, to South Bend, Texas. Sale may be made for all cash or upon terms.

BIDS WILL BE RECEIVED up to and including May 25th, 1925, for (1) the properties as a whole; (2) each lease separately, with the equipment pertaining thereto; (3) the telephone line; (4) the personal property, buildings, etc., not required for operation of the wells. Right is reserved to reject any and all bids.

COMPLETE INFORMATION as to the leases, wells and personal property will be furnished on request.

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